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OF THE

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1. Report of the Auditor General for the year ended 31st March, 1910. Volume I, Parts A to P, and Volume II, Parts Q to Y. Presented 21st November, 1910, by Hon. William Paterson.. .. ..*Printed for both distribution and sessional papers.*

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2. Public Accounts of Canada, for the fiscal year ended 31st March, 1910. Presented 21st November, 1910, by Hon. William Paterson.
Printed for both distribution and sessional papers.

3. Estimates for the fiscal year ending 31st March, 1912. Presented 2nd December, 1910, by Rt. Hon. Sir Wilfrid Laurier... ..*Printed for both distribution and sessional papers.*

4. Supplementary Estimates for the fiscal year ending 31st March, 1911. Presented 6th February, 1911, by Hon. W. S. Fielding.
Printed for both distribution and sessional papers.

5. Further Supplementary Estimates of sums required for the service of the Dominion for the year ending on 31st March, 1911. Presented 16th March, 1911, by Hon. W. S. Fielding.. .. ..*Printed for both distribution and sessional papers.*

5*a*. Further Supplementary Estimates for the year esding 31st March, 1911. Presented 8th May, 1911, by Hon. W. S. Fielding.
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5*b*. Further Supplementary Estimates for the fiscal year ended 31st March, 1911 Presented 3rd May, 1911, by Hon. W. S. Fielding.
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5c. Further Supplementary Estimates for the fisel year ending 31st March, 1912. Presented 9th May, 1911, by Hon. W. S. Fielding.
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5*d*. Further Supplementary Estimates of sums required for the service of the Dominion for the year ending on 31st March, 1912. Presented 17th May, 1911, by W. S. Fielding.
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6. List of shareholders in the Chartered Banks of the Dominion of Canada as on December 31, 1910. Presented 10th April, 1911, by Hon. W. S. Fielding.
Printed for both distribution and sessional papers.

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7. Report on dividends remaining unpaid, unclaimed balances and unpaid drafts and bills of exchange in Chartered Banks of the Dominion of Canada, for five years and upwards prior to December 31, 1910. Presented 19th July, 1911, by Hon. William Templeman.. .. ..*Printed for both distribution and sessional papers.*

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8. Report of the Superintendent of Insurance, for the year ended 31st December, 1910.
Printed for both distribution and sessional papers.

9. Abstract of Statements of Insurance Companies in Canada for the year ended 31st December, 1910. Presented 27th April, 1911, by Hon. W. S. Fielding.
Printed for distribution.

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10. Report of the Department of Trade and Commerce, for the fiscal year ended 31st March, 1910. Part 1, Canadian Trade. Presented 22nd November, 1910, by Rt. Hon. Sir Wilfrid Laurier.. .. ..*Printed for both distribution and sessional papers.*

10*a*. Report of the Department of Trade and Commerce, Part II. Canadian Trade with France, Germany, United Kingdom and United States. Presented 32nd November, 1910, by Rt. Hon. Sir Wilfrid Laurier.
Printed for both distribution and sessional papers.

10b. Report of the Department of Trade and Commerce, Part III. Canadian Trade with foreign countries, except France, Germany, the United Kingdom and United States Presented 22nd November, 1910, by Rt. Hon. Sir Wilfrid Laurier.
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10c, Report of the Department of Trade and Commerce for the fiscal year ended 31st March, 1910. Part IV, Canadian Trade, Miscellaneous. Presented 31st March, 1911, by Hon. W. S. Fielding.. .. ..*Printed for both distribution and sessional papers.*

10d. Report of the Department of Trade and Commerce for the fiscal year ended March 31st 1910. Part V, Grain Statistics, including the crop year ended August 31st 1910, and the season of navigation ended December 6th, 1910. Presented 12th May, 1911, by Hon. William Paterson....*Printed for both distribution and sessional papers.*

10e. Report of the Department of Trade and Commerce for the fiscal year ended 31st March, 1910, Part VI., Subsidized steamship services. Presented 20th April, 1911, by Hon. William Paterson.. .. ..*Printed for both distribution and sessional papers.*

10*f* Report of Trade and Commerce for the fiscal year ended 31st March, 1910, part VII.—Trade of foreign countries and Treaties and Conventions. Presented 31st March, 1911, by Hon. W. S. Fielding.. ..*Printed for both distribution and sessional papers.*

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11. Report of the Department of Customs, for the year ended 31st March, 1910. Presented 21st November, 1910, by Hon. William Paterson.
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12. Reports, Returns and Statistics of the Inland Revenue for the Dominion of Canada, for the year ended 31st March, 1910. Presented 21st November, by Hon. William Templeman.. .. ..*Printed for both distribution and sessional papers.*

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13. Inspection of Weights and Measures, Gas and Electric Light, for the year ended 31st March, 1910. Presented 21st November, 1910, by Hon. William Templeman.
Printed for both distribution and sessional papers.

14. Report on Adulteration of Food, for the year ended 31st March, 1910. Presented 21st November, 1910, by Hon. William Templeman.
Printed for both distribution and sessional papers.

15. Report of the Minister of Agriculture for the Dominion of Canada, for the year ended 31st March, 1910. Presented 21st November, 1910, by Hon. S. A. Fisher.
Printed for both distribution and sessional papers.

15a. Report of the Dairy and Cold Storage Commissioner for the fiscal year ending the 31st March, 1910. Presented 12th January, 1911, by Hon. S. A. Fisher.
Printed for both distribution and sessional papers.

15*b*. Report of the Veterinary Director General and Live Stock Commissioner, J. G. Rutherford, V.S., for the year ending 31st March, 1909.
Printed for both distribution and sessional papers.

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16. Report of the Director and Officers of the Experimental Farms, for the year ending 31st March, 1910. Presented 21st November, 1910, by Hon. S. A. Fisher.
Printed for both distribution and sessional papers.

17. Criminal Statistics for the year ended 30th September, 1909. Presented 21st November, 1910, by Hon. S. A. Fisher.. .. ..*Printed for both distribution and sessional papers.*

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18. (1908). Return of the eleventh general election for the House of Commons of Canada, held on the 19th and 26th of October, 1908.. .. ..*Reprinted.*

18. Return of By-Elections (Eleventh Parliament) House of Commons. 1910.
Printed for both distribution and sessional papers.

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19. Report of the Minister of Public Works on the works under his control for the year ended 31st March, 1910. Presented 21st November, 1910, by Hon. William Pugsley.
Printed for both distribution and sessional papers.

19a. Progress Report Ottawa River Storage, for the fiscal year 1909-1910 (supplementing investigations in regard to Georgian Bay Ship Canal project). Presented 6th March, 1911, by Hon. William Pugsley..*Printed for both distribution and sessional papers.*

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19b. Report upon Reconnaisance Survey of the Nelson River, September-October, 1909. Presented 16th February, 1911, by Hon. William Pugsley.
Printed for both distribution and sessional papers.

20. Report of the Department of Railways and Canals, for the fiscal year ended 31st March, 1910. Presented 21st November, 1910, by Hon. G. P. Graham.
Printed for both distribution and sessional papers.

20a. (1909.) Canal Statistics for the season of navigation, 1909. Presented 21st March, 1910, by Hon. G. P. Graham .. .. ..*Printed for both distrbiution and sessional papers.*

20a. Canal Statistics for the season of navigation, 1910. Presented 10th April, 1911, by Hon. G. P. Graham.. .. ..*Printed for both distribution and sessional papers.*

20b. Railway Statistics of the Dominion of Canada, for the year ended 30th June, 1910. Presented 16th December, 1910, by Hon. G. P. Graham.
Printed for both distribution and sessional papers.

CONTENTS OF VOLUME 13.

20c. Fifth Report of the Board of Railway Commissioners for Canada, for the year ending 31st March, 1910. Presented 21st November, 1910, by Hon. G. P. Graham.
Printed for both distribution and sessional papers.

21. Report of the Department of Marine and Fisheries (Marine, 1910. Presented 21st November, 1910, by Hon. L. P. Brodeur.
Printed for both distribution and sessional papers.

21a. Report of the Geographic Board of Canada containing all decisions to 30th June, 1910.
Printed for both distribution and sessional papers.

CONTENTS OF VOLUME 14.

21b. Report on Ice formation in the St. Lawrence River, and Report of the influence of Icebergs on the temperature of the Sea as shown by use of the Micro-Thermometer in a trip to Hudson Strait and Bay in July, 1910, by H. T. Barnes, D.Sc., F.R.S.C. Presented 16th May, 1911, by Hon. S. A. Fisher.
Printed for both distribution and sessional papers.

21c. List of Shipping issued by the Department of Marine and Fisheries, being a list of vessels on the registry books of Canada, on 31st December, 1910. Presented 19th July, 1911, by Hon. L. P. Brodeur.
Printed for both distribution and sessional papers.

22. Report of the Department of Marine and Fisheries (Fisheries), 1910. Presented 21st November, 1910, by Hon. L. P. Brodeur.
Printed for both distribution and sessional papers.

CONTENTS OF VOLUME 15.

23. Report of the Harbour Commissioners, &c., to 31st December, 1910.
Printed for both distribution and sessional papers.

23a. Report of the Chairman of the Board of Steamboat Inspection, for the fiscal year 1910. Presented 21st November, 1910, by Hon. L. P. Brodeur.
Printed for both distribution and sessional papers.

CONTENTS OF VOLUME 15—*Concluded.*

24. Report of the Postmaster General for the year ended 31st March, 1910. Presented 22nd November, 1910, by Rt. Hon. Sir Wilfrid Laurier.
Printed for both distribution and sessional papers.

CONTENTS OF VOLUME 16.

25. Report of the Department of the Interior, for the fiscal year ending 31st March, 1910. Presented 21st November, 1910, by Hon. Frank Oliver.
Printed for both distribution and sessional papers.

CONTENTS OF VOLUME 17.

25*a*. Report of the Chief Astronomer, Department of the Interior, for year ending 31st. March, 1910.. .. ..*Printed for both distribution and sessional papers.*

25*b*. Annual Report of the Topographical Surveys Branch, Department of the Interior, 1909-10. Presented 31st March, 1911, by Hon. Frank Oliver.
Printed for both distribution and sessional papers.

25*c*. Report of Dr. P. H. Bryce, Chief Medical Officer, Appendix to Report of Superintendent of Immigration. Presented 9th. December, 1910, by Hon. Frank Oliver.
Printed for both distribution and sessional papers.

CONTENTS OF VOLUME 18.

25*d*. Report of the Hydrographic Survey (Streams measurement). Department of the Interior.. .. ..*Printed for both distribution and sessional papers.*

26. Summary Report of the Geological Survey Branch, Department of Mines, for Calendar year 1910. Presented 19th. July, 1911, by Hon. William TeTmpleman.
Printed for both distribution and sessional papers.

26*a*. (1909) Summary Report of the Mines Branch of Department of Mines, for the calendar year, 1909. Presented 26th. January, 1911, by Hon. William Templeman.
Printed for both distribution and sessional papers.
This is bound in Vol. XVI, 1910.

CONTENTS OF VOLUME 19.

27. Report of the Department of Indian Affairs, for the year ended 31st March, 1910. Presented 21st November, 1910, by Hon. Frank Oliver.
Printed for both distribution and sessional papers.

28. Report of the Royal Northwest Mounted Police, 1910. Presented 2nd December, 1910, by Rt. Hon. Sir Wilfrid Laurier..*Printed for both distribution and sessional papers.*

CONTENTS OF VOLUME 20.

29. Report of the Secretary of State of Canada for the year ended 31st March, 1910. Presented 21st November, 1910, by Hon. Charles Murphy.
Printed for both distribution and sessional papers.

29a. (No issue).

CONTENTS OF VOLUME 20—*Concluded.*

29b. Report of the Secretary of State for External Affairs, for the year ended 31st March, 1910. Presented 21st November, 1910, by Hon. Charles Murphy.
Printed for both distribution and sessional papers.

30. Civil Service List of Canada, 1910. Presented 21st November, 1910, by Hon. Charles Murphy... .. ..*Printed for both distribution and sessional papers.*

CONTENTS OF VOLUME 21.

31. Second Annual Report of the Civil Service Commission of Canada, for the period from 1st September, 1909 to 31st August, 1910. Presented 1st December, 1910, by Hon. Charles Murphy.. .. ..*Printed for both distribution and sessional papers.*

32. Annual Report of the Department of Public Printing and Stationery, for the fiscal year ended 31st March, 1910. Presented 22nd November, 1910, by Hon. Charles Murphy.. .. ..*Printed for both distribution and sessional papers.*

33. Report of the Joint Librarians of Parliament for the year 1910. Presented 17th November, 1910, by the Hon. tho Speaker.. .. .. ..*Printed for sessional papers.*

34. Report of the Minister of Justice as to Penitentiaries of Canada, for the fiscal year ended 31st March, 1910. Presented 30th November, 1910, by Hon. A. B. Aylesworth.
Printed for both distribution and sessional papers.

35. Report of the Militia Council, for the fiscal year ending 31st March, 1910. Presented 21st November, 1910, by Hon. Sir Frederick Borden.
Printed for both distribution and sessional papers.

35a. Report of General Sir John French, G.C.B., Inspector General of the Imperial Forces, upon his Inspection of the Canadian Military Forces. Presented 22nd November, 1910, by Hon. Sir Frederick Borden.
Printed for both distribution and sessional papers.

35b. Report upon the best method of giving affect to the recommendations of General Sir John French, regarding the Canadian Militia, by Major General Sir P. H. N. Lake, K.C.M.G., Inspector General. Presented 22nd November, 1910, by Hon. Sir Frederick Borden.. .. ..*Printed for distribution and sessional papers.*

35c. Interim Report of the Militia Council for the Dominion of Canada on the Training of the Militia during the season of 1910. Presented 31st March, 1911, by Hon. Sir Frederick Borden.. .. ..*Printed for distribution.*

36. Report of the Department of Labour, for the fiscal year ending 31st March, 1910, including Report of Proceedings under the Industrial Disputes Investigation Act, 1907. Presented 21st November, 1910, by Hon. W. L. Mackenzie King.
Printed for both distribution and sessional papers.

CONTENTS OF VOLUME 22.

36a. Report on Industrial Disputes in Canada up to 31st March, 1911.
Printed for both distribution and sessional papers.

36b. Comparative prices of Agricultural, Fisheries, Lumber and Mine products in Canada and the United States, 1906-1911. Presented 28th July, 1911, by Hon. W. L. Mackenzie King.. .. ..*Printed for both distribution and sessional papers.*

CONTENTS OF VOLUME 22—*Concluded.*

37. Sixth Report of the Commissioners of the Transcontinental Railway, for the year ending 31st March, 1910. Presented 21st November, 1910, by Hon. G. P. Graham.
Printed for both distribution and sessional papers.

38. Report of the Royal Commission on Trade Relations between Canada and the West Indies, together with Part II, Minutes of evidence taken in Canada and Appendices; Part III, Minutes of evidence taken in the West Indies, and Appendices; and also Part IV, Minutes of evidence taken in London and Appendices. Presented 21st November, 1910, by Ho. William Paterson.. .. ..*Printed for Sessional Papers.*

39. Report of the Honourable the Secretary of State, on the inquiry into the affairs of the Department of Public Printing and Stationery. Presented 21st November, 1910, by Hon. Charles Murphy.. .. .. ..*Printed for both distribution anl sessional papers.*

CONTENTS OF VOLUME 23.

40. Ordinances of the Yukon Territory, passed by the Yukon Council in the year, 1909. Presented 21st November, 1910, by Hon. Charles Murphy.. .. ..*Not printed.*

40a. Ordinances of the Yukon Territory passed by the Yukon Council in the year 1910. Presented 4th April, 1911, by Hon. Charles Murphy.. .. ..*Not printed.*

41. General Orders issued to the Militia, between the 1st November, 1909, and the 18th October, 1910. Presented 22nd November, 1910, by Hon. Sir Frederick Borden.
Not printed.

42. Statement of Governor General's Warrants issued since the last session of Parliament. on account of the fiscal year 1910-11. Presented 22nd November, 1910, by Hon. William Paterson.. .. ..*Not printed.*

43. Statement in pursuance of section 17 of the Civil Service Insurance Act, for the year ending 31st March, 1910. Presented 22nd November, 1910, by Hon. William Paterson.
Not printed.

44. Statement of expenditure on account of miscellaneous unforeseen expenses, from the 1st April, 1910, to 17th November, 1910, in accordance with the Appropriation Act of 1910. Presented 22nd November, 1910, by Hon. William Paterson....*Not printed.*

45. Statement of Superannuation and Retiring Allowances in the Civil Service during the year ending 31st December, 1910, showing name, rank, salary, service, allowance and cause of retirement of each person superannuated or retired, also whether vacancy filled by promotion or by new appointment, and salary of any new appointee. Presented 22nd November, 1911, by Hon. William Paterson.. .. ..*Not printed.*

46. Report of the proceedings of the preceding year, of the Commissioners of Internal Economy of the House of Commons, pursuant to Rule 9. Presented 1st December, 1910, by the Hon. the Speaker.. .. ..*Printed for sessional papers.*

47. Return, in pursuance of section 16, of the Government Annuities Act, 1908, containing statement of the business done during the fiscal year, ending 31st March, 1910. Presented 1st December, 1910, by Hon. S. A. Fisher.. .. ..*Printed for sessional papers.*

48. Return to an order of the House of Commons, dated 1st December, 1910, for a copy of the existing lobster fishery regulations, adopted by Order in Council on 30th September, 1910. Presented 1st December, 1910, by Hon. L. P. Brodeur.
Printed for sessional papers.

CONTENTS OF VOLUME 23—*Continued.*

49. Detailed statement of all bonds or securities registered in the Department of the Secretary of State of Canada, since last return (25th November, 1909), submitted to the Parliament of Canada under Section 32 of Chapter 19, of the Revised Statutes of Canada, 1906. Presented 1st December, 1910, by Hon. Charles Murphy.. ..*Not printed.*

50. Annual Return respecting Trade Unions, under chapter 125, R.S.C., 1906. Presented 1st December, 1910, by Hon. Charles Murphy.. .. ..*Not printed*

51. Regulations under "The Destructive Insect and Pest Act." Presented 1st December, 1910, by Hon. S. A. Fisher.. .. ..*Not printed.*

52. First Annual Report of the Commission on Conservation, 1910. Presented 5th December, 1910, by Hon. S. A. Fisher.. .. ..*Printed for sessional papers.*

53. Regulations established by Order in Council of 17th May, 1910, for the disposal of petroleum and gas on the Indian Reserves in the Provinces of Alberta and Saskachewan and in the Northwest Territories. Presented 5th December, 1910, by Hon. Charles Murphy.. .. .. y .. .. ..*Not printed.*

54. Report of the International Waterways Commission on the regulation of Lake Erie, with a discussion of the regulation of the Great Lakes System. Presented 7th December, 1910, by Hon. William Pugsley.. .. ..*Printed for sessional papers.*

54*a*. Return to an Address of the House of Commons, dated 12th December, 1910, for a copy of all orders in council or other authority, appointing members of the Canadian section of the Joint International Waterways Commission, together with all reports, recommendations and correspondence submitted to the Government, or any department thereof, by the said Canadian section, or any member thereof. Also a statement of the total expenses of such Canadian section up to date, with particulars thereof. Presented 8th May, 1911.—*Mr. Macdonell*.. .. .. ..*Not printed.*

55. Return in so far as the Department of the Interior is concerned) of copies of all Orders in Council, plans, papers, and correspondence which are required to be presented to the House of Commons, under a Resolution passed on 20th February, 1882, since the date of the last return, under such Resolution. Presented 9th December, 1910, by Hon. Frank Oliver.. .. ..*Not printed.*

55*a*. Return of lands sold by the Canadian Pacific Railway Company during the year which ended on the 31st October, 1910. Presented 4th May, 1911, by Hon. Frank Oliver .. .. *Not printed.*

56. Regulations issued by the Department of the Naval Service regarding rates of Pay, pursuant to Section 47 of the Naval Service Act. Presented 9th December, 1910, by Hon. L. P. Brodeur... .. ..*Not printed.*

56*a*. Regulations issued by the Department of the Naval Service, regarding the issue of the existing Lobster Fishery Regulations, adopted by rder in Council on 30th September, 1910, by Hon. L. P. Brodeur.. .. ..*Not printed.*

56*b*. Return to an order of the House of Commons, dated 5th December, 1910, for a statement showing the detailed expenditure to date out of the sum voted by the House in connection with the new Navy, giving in each case the amount paid, to whom paid and the object of the expenditure. Presented, 16th December, 1910.—*Mr. Monck*.. .. ..*Not printed.*

CONTENTS OF VOLUME 23—*Continued.*

56*c*. Return to an order of the House of Commons dated 14th December, 1910, for a Return showing how many applications have been received from Canadian citizens for service in the proposed Canadian Navy, as officers, and able seamen or blue-jackets, respectively, and how many officers and men, respectively, of the British Navy have made application for such service. Presented 11th January, 1911.—*Mr. Jameson* .. .. *Not printed.*

56*d*. Return to an address of the Senate dated 24th November, 1910, for the following information:—1. Has the Department of the Naval Service, which was erected by the legislation of last session, been regularly organized and put in operation? 2. Who has been appointed Deputy Minister by the Governor in Council? 3. Who are the other officials and clerks necessary for the proper administration of the affairs of the new department who have been appointed by the Governor in Council? 4. Who among these officials and clerks are those who have been transferred from the Department of Marine and Fisheries to the Department of the Naval Service? 3. Wro among these officials and clerks come from elsewhere? 6. What is the salary of each of the officials? Presented 11th January, 1911.—*Hon. Mr. Landry*....*Not printed.*

56*e*. Return to an order of the House of Commons, dated 7th December, 1910, for a statement showing:—1. The names of all those engaged to date by the Government in connection with the new Naval Deparment, whether for service at sea or for work in connection with the department, either for inside or outside service. 2. The domicile of origin of those thus engagged, their previous occupation, rank or grade in the British Navy or elsewhere, and previous rate of pay or remuneration 3. The duties assigned, rank or occupation of those thus engaged in the service of Canada, and present salary and allowances. Presented 18th January, 1911.—*Mr. Monk*.. .. ..*Not printed.*

56*f*. Copy of an Order in Council approved by His Excellency the Governor General on the 22nd December, 1910, authorizing certain allowances to Petty Officers and men in the Naval Service. Presented 19th January, 1911, by Hon. L. P. Brodeur.
Not printed.

56*g*. Copy of an Order in Council approved by His Excellency the Governor General on the 22nd December, 1910, and publisded in the *Canada Gazette* on the 14th January, 1911, authorizing increase in wages to certain ratings in the naval service. Presented 19th January, 1911, by Hon. L. P. Brodeur.. .. ..*Not printed.*

56*h*. Return to an Address of the House of Commons, dated 11th January, 1911, for a return showing all rules and regulations passed by the Governor in Council under the provisions of the Navy Act, adopted at the last session of parliament. Presented 26th January, 1911.—*Mr. Monk*.. .. ..*Not printed.*

56*i*. Return to an order of the Senate dated the 24th November, 1910, for a statement showing in as many distinct columns:—1. The name of the electoral district. 2 The name of the parish, township, town or city. 3. The name of the first signer, and mention of the additional number of signers of each of the petitions presented during the last session, either to the House of Commons or to the Senate, praying for the postponement of the adoption of the proposed Naval Act until the people have had the opportunity of expressing their will by means of a plebiscite. 4. The date of the presentation of each of these petitions. 5. The names, in each case, of the Member or Senator who presented these petitions. Presented 30th November, 1910.—*Hon. Mr. Landry*.. .. ..*Not printed.*

CONTENTS OF VOLUME 23—*Continued.*

56*j*. Return to an order of the Senate dated February 1, 1911, calling for in as many columns:—1. The names of all the ships of which the Canadian fleet service is actually composed. 2. The tonnage of each of these ships. 3. How old, is each ship at present. 4. The purchase price, or cost of construction, or, in default thereof, the actual value of each ship. 5. The horse-power of each of them. 6. The motive power, side wheels, propeller or sails. 7. The number of persons of which the crew of each of these ships is composed. 8. The cost of annual maintenance of each ship with its crew. 9. The purpose for which each ship is used, specifying whether it is for the guarding of the coasts, the protection of fisheries, or for the what other purpose. 10. The waters on which each of these ships sails—the waters of the Atlantic or Pacific Oceans, the Great Lakes, of the St. Lawrence river, or elsewhere, with a short statement showing the number and the net tonnage of the ships of the Great Lakes service,—of the ships stationed on the shores of British Columbia, and of the ships sailing on the waters of the eastern portion of the American continent owned by us. Presented 14th February, 1911.—*Hon. Mr. Landry.*
Not printed.

56*k*. Orders in Council published in *Canada Gazette* 11th February, 1911, No. 83/146. Regulations for entry of naval instructors. No. 91/146. Revised rates of pay for electricians. No. 86/146. Revised travelling allowances. Presented 23rd February, 1911, by Rt. Hon. Sir Richard Cartwright.. .. ..*Not printed.*

56*l*. Return to an address of the House of Commons, dated 6th February, 1911, for a copy of the final protocol or agreement entered into at the International Naval Conference held in London, December, 1908,.February, 1909, and of the general report presented to the said Naval Conference on behalf of its drafting committee, and of all correspondence exchanged between the Imperial Government and the Government of Canada in regard to the same. Prosented 10th March, 1911.—*Mr. Monk*.. .. ..*Not printed.*

56*m*. 1. Correspondence and documents respecting the International Naval Conference held in London, December, 1908, February, 1909. 2. Correspondence respecting the Declaration of London. 3. Final Act of the Second Peace Conference held at The Hague in 1907, and Conventions and Declarations annexed thereto. Presented 23rd March, 1911, by Rt. Hon. Sir Wilfrid Laurier.. .. ..*Not printed*

56*n*. Return to an order of the House of Commons, dated 27th February, 1911, for a Return showing —1. How many Canadians have been accepted as members of the Canadian Navy. 2. What are the names and former residence of those who have been accepted. Presented 21th March, 1911.—*Mr. Taylor (Leeds)*,.. .. .. ..*Not printed*

56*o*. Order in Council, approved by His Excellency the Governor General on the 31st March, 1911, and published in the *Canada Gazette* April 15th, 1911:—No. 358 revised regulations for entry of surgeons into the Naval Service. Presented 24th April, 1911, by Hon. L. P. Brodeur.. .. ..*Not printed.*

57. Return to an Order of the House of Commons, dated the 7th December, 1910, for a copy of all correspondence between the Government of Canada or the Right Honourable, the First Minister, and the government of Manitoba, or the Premier of Manitoba, referring to the demand of Manitoba for an extension of boundaries and an increase in subsidy. Presented 11th December, 1910.—*Mr. Staples.*
Printed for sessional papers.

58. Memorandum respecting the finances of the National Battlefields Commission, as on the 31st March, 1910. Presented 15th December, 1910, by Hon. William Paterson.
Printed for sessional papers.

CONTENTS OF VOLUME 23—*Continued.*

58*a*. Report from The National Battlefields Commission. Presented 15th December, 1910, by Rt. Hon. Sir Wilfrid Laurier.. .. ..*Printed for sessional papers.*

58*b*. Return to an Address of the Senate dated 24th February, 1911, calling for a copy of the last report made to the Government by the members of the Quebec Battlefields Commission. Presented 10th March, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

58c. Return to an Order of the Senate dated 12th January, 1911, for copies of all Orders in Council relating to the appointment of members of the "National Battlefields Commission" of the Province of Quebec, as well as a statement showing the sums received by the said Commission, the sources whence received, the interest thereon, the expenses incurred, the nature of such expenses, distinguishing what has been paid for the acquisition of lands, the balance in hand, and the approximate cost, with the nature of the expenses to be incurred to attain the end which the Commission has proposed for itself. Presented 21st March, 1911.—*Hon. Mr. Landry. Not printed.*

58*d*. Return to an order of the Senate dated 23rd February, 1911, for a statement showing the number of gold, silver, and bronze medals, which the Quebec Battlefields Commission has caused to be struck in commemoration of the three hundredth anniversary of the foundation of the City of Quebec, the cost of each of these series of medals, the names of the persons to whom, or the institutions to which, gold medals, silver medals, and bronze medals have been given. Presented 28th April, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

59 Return to an address of the House of Commons, dated 7th December, 1910, for a copy of all petitions, memorials and resolutions from individuals, Boards of Trade or other bodies and corporations, favouring or asking for a treaty or reciprocity with the United States; and also if all similar documents protesting against or unfavourable to the same, and a copy of all correspondence had with the Government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 15th December, 1910.—*Mr. Foster*.. .. .. ..*Not printed.*

59a. Supplementary return to an address of the House of Commons, dated 7th December 1910, for a copy of all petitions, memorials and resolutions from individuals, Boards of Trade or other bodies and corporations, favouring or asking for a treaty of reciprocity with the United States; and also of all similar documents protesting against or unfavourable to the same, and a copy of all correspondence had with the government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 11th January, 1911.—*Hon. Mr. Foster. Not printed*

59*b*. Further supplementary return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all petitions, memorials and resolutions from individuals, Boards of Trade or other bodies and corporations, favouring or asking for a treaty of reciprocity with the United States; and also of all similar documents protesting against or unfavourable to the same, and a copy of all correspondence had with the Government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 3rd February, 1911.—*Hon. Mr. Foster*.. .. ..*Not printed.*

59c. Further supplementary return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all petitions, memorials and resolutions from individuals, Boards of Trade or other bodies and corporations, favouring os asking for a treaty of reciprocity with the United States; and also of all similar documents

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protesting against or unfavourable to the same, and a copy of all correspondence had with the Government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 8th February, 1911.—*Hon. Mr. Foster*.. .. ..*Not printed.*

59*d*. Further supplementary return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all petitions, memorials and resolutions from individuals, boards of trade or other bodies and corporations, favouring or asking for a treaty of reciprocity with the United States; and also of all similar documents protesting against or unfavourable to the same, and a copy of all correspondence had with the government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 27th February, 1911.—*Hon. Mr. Foster*.,
Not printed.

59*e*. Further supplementary return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all petitions, memorials and resolutions from individuals, Boards of Trade or other bodies and corporations, favouring or asking for a treaty of reciprocity with the United States; and also of all similar documents protesting against or unfavourable to the same, and a copy of all correspondence had with the Government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 8th March, 1911.—*Hon. Mr. Foster*.
Not printed.

59*f*. Further supplementary return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all petitions, memorials and resolutions from individuals, Boards of Trade or other bodies and corporations, favouring or asking for a treaty of reciprocity with the United States; and also of all similar documents protesting against or unfavourable to the same, and a copy of all correspondence had with the Government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 14th March, 1911.—*Hon. Mr. Foster*.
Not printed.

59*g*. Further supplementary return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all petitions, memorials and resolutions from individuals, Boards of Trade or other bodies and corporations, favouring or asking for a treaty of reciprocity with the United States; and also of all similar documents protesting against or unfavourable to the same, and a copy of all correspondence had with the Government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 22nd March, 1911.—*Hon. Mr. Foster*.
Not printed.

59*h*. Further supplementary return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all petitions, memorials and resolutions from individuals, Boards of Trade or other bodies and corporations, favouring or asking for a treaty of reciprocity with the United States; and also of all similar documents protesting against or unfavourable to the same, and a copy of all correspondence had with the Government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 27th March, 1911.—*Hon. Mr. Foster*.
Not printed.

59*i*. Further supplementary return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all petitions, memorials and resolutions from individuals, boards of trade or other bodies and corporations, favouring or asking for a treaty of reciprocity with the United States; and also of all similar documents pro-

CONTENTS OF VOLUME 23—*Continued.*

testing against or unfavourable to the same, and a copy of all correspondence had with the Government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 28th March, 1911.—*Hon. Mr. Foster.*
Not printed.

59*j*. Further supplementary return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all petitions, memorials and resolutions from individuals, Boards of Trade or other bodies and corporations, favouring or asking for a treaty of reciprocity with the United States; and also of all similar documents protesting against or unfavourable to the same, and a copy of all correspondence had with the government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 28th March, 1911.—*Hon. Mr. Foster.*
Not printed.

59*k*. Further supplementary return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all petitions, memorials and resolutions from individuals, Boards of Trade or other bodies and corporations, favouring or asking for a treaty of reciprocity with the United States; and also of all similar documents protesting against or unfavourable to the same, and a copy of all correspondence had with the Government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Prsented 31st March, 1911. *Hon. Mr. Foster.*
Not printed.

59*l*. Further supplementary return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all petitions, memorials and resolutions from individuals, Boards of Trade or other bodies and corporations, favouring or asking for a treaty of reciprocity with the United States; and also of all similar documents protesting against or unfavourable to the same, and a copy of all correspondence had with the government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 7th April, 1911. —*Hon. Mr. Foster.*
Not printed.

59*m*. Further supplementary return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all petitions, memorials and resolutions from individuals, Boards of Trade or other bodies and corporations, favouring or asking for a treaty of reciprocity with the United States; and also of all similar documents protesting against or unfavourable to the same, and a copy of all correspondence had with the Government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 19th April, 1911.—*Hon. Mr. Foster.*
Not printed.

59*n*. Further supplementary return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all petitions, memorials and resolutions from individuals, Boards of Trade or other bodies and corporations, favouring or asking for a treaty of reciprocity with the United States; and also of all similar documents protesting against or unfavourable to the same, and a copy of all correspondence had with the Government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 19th April, 1911.—*Hon. Mr. Foster.*
Not printed.

59*o*. Further supplementary return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all petitions, memorials and resolutions from individuals, boards of trade or other bodies and corporations, favouring or asking for a treaty of reciprocity with the United States, and also of all somilar documents pro-

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testing against or unfavourable to the same, and a copy of all correspondence had with the Government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 2nd May, 1911.—*Hon. Mr. Foster.*

Not printed.

59*p*. Further supplementary return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all memorials and resolutions from individuals, Boards of Trade or other bodies and corporations, favouring or asking for a treaty of reciprocity with the United States; and also of all similar documents protesting against or unfavourable to the same, and a copy of all correspondence had with the Government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 5th May, 1911.—*Hon. Mr. Foster.*

Not printed.

59*q*. Return to an Order of the House of Commons, dated 19th April, 1911, for a Return showing what duties are imposed by Australia, New Zealand, Norway, France, Spain, Sweden, Switzerland, Austria-Hungary, Japan, Argentine, Venezuela and Russia, respectively, upon each of the articles included in the reciprocity agreement between the United States and Canada.

And also, a statement showing the import prices in 1910 on which duty was collected on the butter, eggs cheese, salt, beef, bacon, hams, mutton, lamb, pork in brine and other meat products detailed, barley, beans, oats, peas, wheat, hay, flaxseed, green apples, and animals, imported from the above named countries. Presented 8th May, 1911.—*Hon. Mr. Foster*.. .. ..*Not printed.*

59*r*. Return to an order of the House of Commons, dated 8th May, 1911, for a Return showing, taking the latest Return of Commerce and Navigation of the United States as a basis, the advantage Canada will have in the United States market over her principal competitors, under the construction given at Washington by the United States Court of Customs Appeals on April 10th, 1911, regarding the favoured nation clause, by which the competitors of Canada in the United States market are denied the privileges granted to Canada by the reciprocal agreement in regard to the importation into the United States of the following goods and articles, namely: (*a*) Mackerel pickled or salted; (*b*) Herring, pickled; (*c*) Cod, Haddock, Hake and Pollock, dried, smoked, salted or pickled; (*d*) all other kinds of fish, salted or pickled; (*e*) Fish oils: (*f*) Butter; (*g*) Cheese; (*h*) Cattle; (*i*) Horses; (*j*) Oats; (*k*) Coke; (*l*) Mineral Waters; (*m*) Rolled Iron or Steel Sheets, coated with zinc, tin or other metal; (*n*) Mica; (*o*) Flax seed; (*p*) Beans and dried peas; (*q*) Onions; (*r*) Potatoes; (*s*) other vegetables in natural state.

Also showing the present rate of duty in the United States on the above goods and articles; the rate under the proposed reciprocal agreement of the said goods and articles; the value of goods; and the amount of duty collected on goods imported from said competitors on the trade of said year, which will be free under the agreement on goods from Canada. Presented 16th May, 1911.—*Mr. Sinclair .Not printed.*

59 Further supplementary Return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all memorials and resolutions from individuals, Boards of Trade or other bodies and corporations, favouring or asking for a treaty of reciprocity with the United States; and also of all similar documents protesting against or unfavourable to the same, and a copy of all correspondence had with the Government, or any member thereof, concerning reciprocity with the United States, since the 1st January, 1910. Presented 19th May, 1911.—*Hon. Mr. Foster...Not printed.*

CONTENTS OF VOLUME 23—*Continued.*

59*f*. Statements relative to (1) The yearly imports, quantity and value, for the past six years into Canada from, respectively, Australia, New Zealand, Denmark, Holland, Belgium, France, Argentine Republic and the United States, of wheat, oats, horses, cattle, sheep, lambs, mutton, beef, eggs, butter, cheese, fowl, vegetables and fruit.

(2) The average prices of butter and of eggs in London, England, for the past five years in comparison with the prices, respectively, in Eastern Provinces, in Montreal, in Toronto, in Minneapolis, in Chicago, in Detroit, in Buffalo, in Boston and in New York. Presented 28th July, 1911, by Hon. S. A. Fisher.. .. .. ..*Not printed.*

60. Return of orders in council passed between the 1st of November, 1909, and the 30th September, 1910, in accordance with the provisions of section 5 of the Dominion Lands Survey Act, Chapter 21, 7-8 Edward VII. Presented 11th January, 1911. 1911, by Hon. Frank Oliver.. .. ..*Not printed.*

60*a*. Return of Orders in Council which have been published in the *Canada Gazette* and in the British Columbia *Gazette*, between 1st November, 1909, and 30th September, 1910, in accordance with provisions of subsection (*d*) of section 38 of the regulations for the survey, administration, disposal and management of Dominion Lands within the 40-mile railway belt in the province of British Columbia. Presented 11th January, 1911, by Hon. Frank Oliver.. .. ..*Not printed.*

60*b*. Return called for by section 77 of the Dominion Lands Act, chapter 20 of the Statutes of Canada, 1908, which is as follows:—

"77. Every regulation made by the Governor in Council, in virtue of the provisions of this Act, and every order made by the Governor in Council, authorizing the sale of any land or the granting of any interest therein, shall have force and effect only after it has been published for four consecutive weeks in the *Canada Gazette*, and all such orders or regulations shall be laid before both Houses of Parliament within the first fifteen days of the session next after the date thereof, and such regulations shall remain in force until the day immediately succeeding the day of prorogation of that session of Parliament, and no longer, unless during that session they are approved by resolution of both Houses of Parliament." Presented 11th January, 1911, by Hon. Frank Oliver.. .. ..*Not printed.*

61. Return of Orders in Council passed between the 1st November, 1909, and the 30th September, 1910, in accordance with the provisions of the Forest Reserve Act, sections 7 and 13 of Chapter 56, Revised Statutes of Canada. Presented 11th January, 1911, by Hon. Frank Oliver.. .. ..*Not printed.*

62. Return to an order of the House of Commons, dated the 7th December, 1910, for a copy of Sir John Thompson's memorandum on the question of the rights of fishing in the bays of British North America, prepared for the use of the British Plenipotentiaries at Washington in 1888 , and a copy of the Treaty agreed to and approved by the President. Presented 11th January, 1911.—*Hon. Mr. Foster.*

Printed for sessional papers.

63. Return to an Address of the House of Commons, dated 7th December, 1910, for a copy of any memorials, correspondence, &c., between His Excellency the Governor General and the Colonial Office, or between any member of the government, and the foreign consuls general in Canada, relative to the status of the latter, at official functions, such as the vice-regal drawing room. Presented 11th January, 1911.—*Mr. Sproule.*

Printed for sessional papers.

CONTENTS OF VOLUME 23—*Continued.*

64. Return to an order of the House of Commons, dated 6th December, 1910, for a return showing:—1. What newspapers or companies publishing newspapers in the cities of Montreal and Quebec have directly or indirectly received sums from the Government of Canada for printing, lithographing, binding or other work, between the 31st March, 1910, and the 15th November, following.

2. What is the total amount paid to each of said newspapers or companies between the dates above stated. Presented 11th January, 1911.—*Mr. Monk*.. .. ..*Not printed.*

65. Return to an Address of the House of Commons, dated 7th December, 1910, for a copy of all Orders in Council, correspondence, papers, maps or other documents, which passed between the Government of Canada or any member thereof, and the Government of Quebec, or any member thereof, or any other parties on their behalf, or between the Government of Canada and the Government of Ontario, or any members thereof, regarding the extension of the boundaries of the province of Quebec, as set forth in an Order in Council dated 8th July, 1896, establishing a conventional boundary, therein specified. And also any correspondence, papers, documents, &c., that may have passed between the aforesaid governments or members thereof, relative to the passing of an Act to confirm and ratify the aforesaid conventional boundary, which was passed in 1898. Presented 11th January, 1911.—*Mr. Sproule.*

Printed for sessional papers.

66. Return to an Order of the House of Commons, dated 14th December, 1910, for a Return showing the names of manufacturers in Canada of turned kiln dried maple boot, last and shoe last blocks, in the rough, for making manufacturers' boot and shoe lasts. Presented 11th January, 1911.—*Mr. Hughes*.. .. ..*Not printed.*

67. Return to an Order of the House of Commons, dated 5th December, 1910, for a copy of all correspondence, reports, memorials, surveys and other papers in the possession of the Government, and not already brought down, regarding the oyster industry of Canada; also a copy of all correspondence, reports and other papers regarding the ownership and control of Oyster beds and of barren bottoms suitable for Oyster culture, and regarding the consolidating of the ownership with the control and regulation of such beds and barren bottoms, and vesting the same in the hands of the Dominion Government; also a copy of all correspondence, reports, recommendations and other papers relating to the leasing or sale of such beds or barren bottoms or of portions of them, for the purpose of Oyster culture or cultivation. Also o copy of all correspondence and reports relating to the culture, cultivation asd conservation of oysters and other mollusks. Presented 11th January, 1911.—*Mr. Warburton.*

Printed for sessional papers.

68. Order of the House of Commons, dated 5th December, 1910, for a copy of all reports, evidence, correspondence, and other documents relating to an investigation into irregularities in the life saving station at Clayoquot, mentioned on page 353 of the Report of the Department of Marine and Fisheries for 1909 and 1910, sessional paper No. 22. Presented 11th January, 1911.—*Mr. Bernard*.. .. ..*Not printed.*

69. Return to an Order of the House of Commons, dated 14th December, 1910, for a Return showing how many employees of the custom house at Montreal have left the service since the 1st July, 1896, up to this date, with their names, duties, salaries and ages, respectively, and date of their leaving; the names, ages, salaries and duties of those who have replaced them, the date of their entry and their present salaries. Presented 11th January, 1911.—*Mr. Wilson (Laval)*.. .. ..*Not printed.*

CONTENTS OF VOLUME 23—*Continued.*

69*a*. Return to an Order of the House of Commons, dated 8th February, 1911, for a Return showing the full names of the permanent or temporary employees appointed at Montreal since the 1st of January, 1904, in the Post Office Department, the Customs, Inland Revenue and Public Works; the age and place of residence of these employees at the time of their appointment, the dates and nature of changes, promotions or increases of salary granted these employees since their appointment. Presented 28th April, 1911.—*Mr. Gervais*.. .. ..*Not printed.*

70. Return to an Address of the House of Commons, dated 7th December, 1910, for a Return showing what arrangements have been made with foreign countries by the Governor General in Council under the provisions of the Customs Tariff Act of 1907, without reference to Parliament. Presented 11th January, 1911.—*Mr. Ames*.. ..*Not printed.*

71. Return to an Order of the House of Commons, dated 14th December, 1910, for a Return showing the total expenses in connection with the surrender of St. Peter's Indian Reserve, including moving the Indians to new reserve, sale of lands, and all the expense made necessary by the surrender. Presented 11th January, 1911.—*Mr. Bradbury*.. .. ..*Not printed*

71*a*. Return to an Order of the House of Commons, dated 14th December, 1910, for a copy of all correspondence with Rev. John McDougall and all instructions given to him regarding St. Peter's Indians and their reserve; and of Rev. John McDougall's report of his investigations at St. Peter's Indian Reserve. Presented 11th January, 1911. —*Mr. Bradbury*.. .. ..*Not printed.*

71*b*. Supplementary Return to an Order of the House of Commons, dated 14th December, 1910, for a Return showing the total expenses in connection with the surrender of St. Peter's Indian Reserve, including moving the Indians to new Reserve, sale of lands, and all the expense made necessary by the surrender. Presented 18th January, 1911. —*Mr. Bradbury*.. .. ..*Not printed.*

71*c*. Return to an Address of the House of Commons, dated 11th January, 1911, for a copy of all correspondence, offers, agreements, orders in council, reports, records, regulations, or other papers or documents, relating to the grant or surrender to one Merrill, or some other person or corporation, of the concession or right to bore for and acquire natural gas, upon or under the Six Nation Reserve, at or near Brantford, Ontario; together with a statement of all monies paid for said concession or right, and also of all monies subsequently received by the Six Nation Indians, or by the government on their behalf for such concession or rights. Presented 2nd February, 1911.—*Mr. Osler*.. .. ..*Not printed.*

72. Return to an Order of the House of Commons, dated 14th December, 1910, for a copy of all correspondence, reports, documents and papers relating to the strike of the employees of the Cumberland Coal and Railway Company, Limited, not previously brought down. Presented 11th January, 1911.—*Mr. Rhodes*.. .. ..*Not printed.*

72*a*. Return to an Order of the House of Commons, dated 5th December, 1910, for a copy of the agreement of settlement of the late strike between the Grand Trunk Railway Company and the conductors and brakemen, and of all correspondence, documents and papers relating thereto, or in consequence thereof, between the said parties, or between either and any person or persons authorized or professing to act for either, or between the Government or any Minister or Deputy Minister or other person on its behalf, and said parties, or either of them, or any person authorized or professing to act for them or either of them before, during, or since said strike. Presented 11th January, 1911.—*Mr. Northrup*.. .. ..*Not printed.*

CONTENTS OF VOLUME 23—*Continued.*

72*b*. Return to an Order of the House of Commons, dated 25th January, 1911, for a copy of all correspondence, documents and papers relating to the late strike on the Grand Trunk Railway between the said railway and the striking conductors and trainmen, or between either and any person or persons authorized or professing to act for either, or between the Government or any Minister or Deputy Minister, or any one on his behalf, and either of said parties or any on professing to act on behalf of either, since the 29th day of November, A.D., 1910, and particularly all documents, papers, correspondence and agreements relating to the reinstatement of any of the men who had been on strike, and the appointment of Judge Barron Presented 2nd February, 1911.—*Mr. Northrup*.. .. ..*Not printed.*

73. Return to an Order of the House of Commons, dated 7th December, 1910, for a Return implementing for the year 1910, the information brought down in answer to an Order of the House of Commons referring to the operations of the mint, dated January 19, 1910. Presented 11th January, 1911.—*Hon. Mr. Foster*.. .. ..*Not printed.*

74. Supplementary Return to an Order of the House of Commons, dated 24th November, 1909, for a return showing the total amounts paid by the government in each year since 1896, for all printing, advertising and lithographing done outside of the Government Printing Bureau; the total amount so paid by each department of the Government or such purposes during each year; the names and addresses of each individual, firm or corporation to whom any such moneys have been so paid, and the total amount paid to each such individual, firm or corporation in each year since 1896. What portion of the said sums, if any, so paid since 1896 was expended after public advertisement, tender and contract, to whom such tenders were awarded, whether to the lowest tender in each case, what portion was expended otherwise than by public advertisement, tender and contract, and to whom it was paid in each instance. Presented 11th January, 1911. *Mr. Armstrong*.. .. ..*Not printed.*

74*a*. Return to an Order of the Senate dated 1st February, 1911, for a Return showing year by year, from July 1st, 1896 up to date, the amounts paid to the Montreal *Herald*, by the several departments of the Government of this country. Presented 8th March, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

74*b*. Return to an Order of the Senate dated 25th January, 1911, for the production of a statement showing, year by year, from the 1st July, 1896 up to this date, the sums of money paid to the newspaper, *Le Soleil*, by each of the different departments of the Government of this country. Presented 8th March, 1911.—*Hon. Mr. Landry.*
Not printed.

74*c*. Return to an Order of the Senate dated 25th January, 1911, for the production of a statement showing, year by year, the sums of money paid the newspaper *La Vigie*, of Quebec, by each of the different departments of the Government of this country from the founding of that newspaper up to this date. Presented 8th March, 1911. *Hon. Mr. Landry*.. .. ..*Not printed.*

74*d*. Return to an Order of the Senate dated 1st February, 1911, for a Return showing, year by year, from 1st July, 1896, up to date, the amounts paid to *La Presse* of Montreal, by the several departments of the Government of this country. Presented 8th March, 1911. *Hon. Mr. Landry*.. .. ..*Not printed.*

74*e*. Return to an Order of the Senate dated 1st February, 1911, for a Return showing, year by year, from July 1st, 1896, up to date, the amounts paid to *La Presse* of Montreal, by the several departments of the Government of this country. Presented 8th March, 1911. *Hon. Mr. Landry*.. .. ..*Not printed.*

CONTENTS OF VOLUME 23—*Continued.*

74*f*. Return to an Order of the Senate dated 24th January, 1911, for a Return showing, year by year, from the 1st July, 1896, up to date, the amounts paid to the paper *Le Canada*, of Montreal, by each of the departments of the government of this country. Presented 8th March, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

74*g*. Return to an Order of the Senate dated 31st January, 1911, showing, year by year, from July the 1st, 1896, up to date, the amounts paid to the Martineau Company by the several departments of the country. Presented 4th April, 1911.—*Hon. Mr. Landry.*
Not printed.

74*h*. Return to an Order of the Senate dated the 31st January, 1911, showing, year by year, from 1st July, 1896, up to date, the amounts paid to Mr. Jean Drolet, of Quebec, by the several departments of the country. Presented 4th April, 1911.—*Hon. Mr. Landry.*
Not printed.

74*i*. Return to an Order of the Senate dated 3rd February, 1911, showing, year by year, from the 1st July, 1896, to this date, the sums of money paid to O. Picard and Sons, of Quebec, by the different departments of the Government of this country. Presented 4th April, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

74*j*. Return to an Order of the Senate dated 24th January, 1911, showing, year by year from July 1, 1896, up to date, the amounts paid to Mr. De Courcy, contractor, by each of the departments of this country. Presented 4th April, 1911. *Hon. Mr. Landry.*
Not printed.

74*k*. Return to an Order of the House of Commons, dated the 23rd February, 1911, for a Return showing:—1. All sums of money paid by the Government since 31st March last to *Le Canada* newspaper of Montreal or the publishers of the same respectively, for advertising or printing, for lithographing or other work; and directly or indirectly for copies of the newspaper.

2. Is the said newspaper executing any work of any kind for the Government at present.

3. Have tenders been called publicly for any of the work done by said newspaper for the government during the past year. Presented 6th April, 1911.—*Mr. Monk.*
Not printed.

74*l*. Supplementary Return to an Order of the Senate dated 24th January, 1911, for a Return showing year by year, from 1st July, 1896, up to date, the amounts paid to Mr. De Courcy, contractor, by each of the departments of this country. Presented 27th April, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

74*m*. Return to an Order of the House of Commons, dated 15th May, 1911, for a Return showing how much was paid by the Government to the proprietors or publishers of the Essex *Record*, a daily and weekly paper published in Windsor, Ontario, for printing and advertising, during the fiscal year ending 31st March, 1907, 1908, 1909, 1910 and 1911. Presented 18th July, 1911.—*Mr. Boyce*.. .. ..*Not printed.*

75. Return to an Order of the House of Commons, dated 12th December, 1910, for a Return showing the average value for duty in 1896 and in 1910, respectively, of the unit of each article or commodity enumerated in the schedules of the Customs Act, on which in both years an ad valorem duty was payable. Presented 12th January, 1911.—*Mr. Borden (Halifax)*.. .. ..*Not printed.*

CONTENTS OF VOLUME 23—*Continued.*

76. Return to an Order of the House of Commons, dated 14th December, 1910, for a Return showing all applications made to the Government during the period of agreement with Japan concerning Japanese immigrants, to admit such immigrants for special purposes, together with a copy of all correspondence in connection with the same. Presented 12th January, 1911.—*Mr. Taylor (New Westminster)*.. .. .. ..*Not printed.*

76*a*. Return to an Order of the House of Commons, dated 7th December, 1910, for a Return giving a list of the special immigration agents appointed by the government since the 31st March, 1909, in what portions of Great Britain and Ireland, the European Continent, or other country they are severally located, their addresses when they were so appointed the date of their appointment in each case their respective salaries and expenses, and any commissions that may have been paid to each or any since their appointment. Presented 12th January, 1911.—*Mr. Wilson (Lennox and Addington)*.. .. ..*Not printed.*

76*b*. Return to an Order of the House of Commons, dated 11th January, 1911, for a Return showing the number of immigrants who have come to Canada since the 31st March last up to the present time, the countries from which they came, the number from each such country, the number of males and the number of females in each case, the number under fourteen years of age, between fourteen and twenty-one years, between twenty-one and forty, and between forty and sixty in each case, their occupations before coming to Canada, their religion, their destination in Canada, their occupation when they arrived at such destination; also the number who have been prevented from landing, and the number deported. Presented 6th February, 1911.—*Mr. Wilson (Lennox and Addington)*.. .. ..*Not printed.*

76*c* Return to an Order of the Senate dated 24th January, 1911, calling for the production in detail of the accounts and claims fyled at the Department of the Interior or the Immigration Office, Quebec, by Mr. Jacques Dery; restaurant keeper, during the navigation season of 1910. Presented 7th February, 1911.—*Hon. Mr. Landry.*

Not printed.

76*d*. Return to an Order of the Senate dated 20th January, 1911, calling for the report received by the Immigration Department on the subject of the complaints brought against Mr. Jacques Dery, the keeper of the restaurant established in the immigration buildings at Quebec, and also of the correspondence exchanged and the inquiry held by the immigration agent with regard to the overcharges by the restaurant keeper, and of the refund which he had to make to immigrants of the price obtained for goods of bad quality. Presented 7th February, 1911.—*Hon. Mr. Landry.*

Not printed.

76*e*. Return to an Order of the Senate dated 25th January, 1911, for the production of a complaint, signed by a large number of persons employed at the Immigration Office and Immigration buildings at Quebec and addressed to the agent of the Department at that place, against Mr. Jacques Dery, the restaurant keeper, and also of the reply of the latter. Presented 7th February, 1911.—*Hon. Mr. Landry*.. .. .. ..*Not printed.*

76*f*. Return to an Order of the Senate dated 25th January, 1911, that an Order of this House do issue for the production of a letter dated 1st June, 1910, written by Mr. L. Stein, of Quebec, addressed to Mr. W. D. Scott, Superintendent of Immigration. Presented 10th February, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

CONTENTS OF VOLUME 23—*Continued.*

76*g*. Return to an Order of the House of Commons, dated 3rd April, 1911, for a Return showing the itemized accounts, vouchers, statements, reports and other papers relating to the salary and expenses of and payments to W. O. Creighton, farmer delegate to Great Britain in 1910. Presented 28th April, 1911.—*Mr. Stanfield*.. .. ..*Not printed*

76*h*. Return to an Order of the House of Commons, dated 3rd April, 1911, for a Return showing all itemized accounts, vouchers, statements, reports and other papers relating to the salary of and payments to W. A. Hickman, immigration agent to Great Britain in 1902 and 1903. Presented 28th April, 1911.—*Mr. Stanfield*.. .. ..*Not printed.*

77. Return to an Order of the House of Commons, dated 5th December, 1910, for a Return showing:—1. The estimated quantity of each class of material required for the construction.

2. The rates or prices agreed upon and the estimated cost of each class of material, based on rates on accepted tender.

3. The total estimated cost based on these quantities and rates in each case of the several bridges let to contract during the fiscal year ended March 31, 1910, referred to on pages 3 and 4 of the Sixth Annual Report of the Commissioners of the Transcontinental Railway.

4. A copy of the specifications and contract in each case, the number of the contract and the name of the contractor.

5. The number of bridges yet to be let to contract, location and character, and the estimated quantity of the different kinds of material in each case.

6. Why these bridges have not been let to contract and when contracts will probably be entered into as to these.

7. The bridges let to contract before March 31, 1909, identified by locality, name of each contractor and number, the estimated cost of each of these bridges at the time the contract was let, based on contract prices, the changes made in the plans, specifications or contracts if any, and claims or allowances for alterations or extras, if any, the percentage of the work done, the payments made to date, the amounts retained as contract reserve, and the ascertained or estimated amount required to complete in each case.

8. The bridges that have been completed, identified as above, the estimated cost at the time of awarding the contract, the nature and extent of changes in plans, specifications, or contract, if any, the increase or decrease of cost thereby occasioned, and the actual total cost of each of those bridges. Presented 13th January, 1911.—*Mr. Lennox*.. .. ..*Not printed.*

77*a*. Return to an Order of the House of Commons, dated 5th December, 1910, for a copy of the Tender and contract of Haney, Quinlan & Robertson for construction of locomotive and other shops about six miles east of Winnipeg, and the total estimated cost based on contract prices. Also a copy of the several other tenders sent in and a statement of the total estimated cost based upon each of these tenders as moneyed out at the time of awarding the contract. Presented 13th January, 1911.—*Mr. Lennox*.. .. ..*Not printed*

77*b*. Return to an Order of the House of Commons, dated 11th January, 1911, for a Return showing as to each contract district of the National Transcontinental Railway between Moncton and Winnipeg, respectively, what was the original departmental estimate of quantities of solid rock, broken stone, earth, sand, &c., and the quantities of each kind of excavation, as above, already paid for. Presented 24th January, 1911.—*Mr. Ames*.. .. ..*Not printed.*

CONTENTS OF VOLUME 23—*Continued.*

77*c*. Return to an Order of the House of Commons, dated 11th January, 1911, for a Return showing in all cases where finished structures on the National Transcontinental Railway, have differed materially, to an extent involving a difference in cost of more than $10,000, from the original standard plans; the original estimated cost of the structure; the cost according to altered plans; the nature of the change; the name of the resident engineer, and of the contractor or sub-contractor; the reason, if any, given for the alteration of plans; and a copy of the correspondence exchanged thereon between the headquarters staff and the engineer on the ground. Presented 24th January, 1911.—*Mr. Ames*.. .. ..*Not printed.*

77*d*. Return to an Order of the House of Commons, dated 11th January, 1911, for a Return showing the clause in the standard contract on the National Transcontinental Railway having reference to train hauled filling, with a statement showing what amounts have been paid to date, and to whom, for services of this nature. Presented 24th January, 1911.—*Mr. Ames*.. .. ..*Not printed.*

77*e*. Return to an Order of the House of Commons, dated 11th January, 1911, for a Return showing what amounts to date have been paid on force account to each and to all contracts connected with the National Transcontinental railway, setting forth the district affected thereby. Presented 24th January, 1911.—*Mr. Ames*.. ..*Not printed.*

77*f*. Return to an Order of the House of Commons, dated 11th January, 1911, for a Return showing all cases where in construction work on the National Transcontinetal Railway a richer mixture of concrete was used than that indicated in the standard specification, to an extent affecting the cost of the work to the amount of $5,000 or more; also the original estimated cost and the actual cost in each of such cases. Presented 24th January, 1911.—*Mr. Ames*.. .. ..*Not printed.*

77*g*. Return to an Order of the House of Commons, dated 11th January, 1911, for a Return showing a list of the members of the engineering staff who have been dismissed, or have resigned or left the service of the National Transcontinental Railway Commission since 1904, with position formerly held, the date of leaving, and the assigned cause in each instance. Presented 7th February, 1911.—*Mr. Ames*.. .. ..*Not printed.*

77*h*. Return to an order of the House of Commons, dated 26th January, 1911, for a Return showing:—1. In those cases in which an agreement was come to last autumn between Mr. Killiher and Mr. Gordon as to overbreak on the eastern Division of the Transcontinental Railway, what quantities of material, and of what class, and what sums of money were taken from or added to the progress Estimates.

2. In the cases where measurements had to be made, have they been made, and with what result. Presented 17th February, 1911.—*Mr. Lennox*.. .. .. ..*Not printed.*

77*i*. Return to an Order of the House of Commons, dated 11th January, 1911, for a Return showing, in respect of all cases on the National Transcontinental Railway, where the original specifications have not been adhered to; the estimated cost as per original plan; the actual or estimated cost as per amended plan; the name of the contractor and the resident engineer, and the reason given by the latter for such change. Presented 24th February, 1911.—*Mr. Ames*.. .. ..*Not printed.*

77*j*. Return to an Order of the House of Commons, dated 16th January, 1911, for a Return showing what will have been the total expenditure upon, in connection with or in consequence of, the National Transcontinental Railway up to the 31st of December, 1910, and what amount it is estimated will be required to complete and fully equip the said road between Winnipeg and Moncton. Presented 27th February, 1911.—*Mr. Ames*.. .. ..*Not printed*

CONTENTS OF VOLUME 23—*Continued.*

77*k*. Interim Report of the Commissioners of the Transcontinental Railway for the nine months ended December 31, 1910. Presented 27th February, 1911, by Hon. G. P. Graham.. .. ..*Not printed.*

77*l*. Return to an Order of the Senate dated 18th January, 1911, for a Return showing:—A. As relates to the main line of the Transcontineutal:—

1. The respective length in miles of each of the divisions of the Transcontinental, named Division A, Division B, &c., from Moncton to Winnipeg, and specifying in which province each of the divisions is located.

2. The estimated cost, at the outset, of the construction of the road in each division.

3. The actual price paid, on the 15th January instant, for the building of the line, sidings, bridges and other necessary works in each division.

4. The approximate cost in each division of the Transcontinental, of what remains to be constructed for the completion of the road.

B. As relates to the branch lines of the Transcontinental:—

1. The respective length of each of the said branch lines, specifying the district and the province within which the said branch lines are located.

2. The estimated cost, at the start, of the construction of each of the said branch lines.

3. The actual cost up to the 15th January instant of the construction of said branch lines.

4. The probable cost of the works to be executed on each of the said branch lines.

5. The indication of the special section of the Act which each branch line has been constructed.

6. The mention of all other branch lines proposed to be constructed by the Transcontinental Railway Commission or the Government, showing the length and probable cost thereof. Presented 8th March, 1911.—*Hon. Mr. Landry.. .. ..Not printed.*

77*m*. Return to an Order of the House of Commons, dated 23rd February, 1911, for a Return showing:—

1. What contracts outside of those numbered 1 to 21, inclusive, have been let for construction on the Transcontinental Railway at Winnipeg and St. Boniface of bridges, station buildings, freight houses, sheds, engine houses, turn tables, water tanks, section houses, work shops, or other buildings, erections, structures or plant.

2. Were these contracts all let after advertisement and upon tender.

3. What is the cost or estimated cost according to schedule or bulk tender in each case, and who is the contractor in each case.

4. Were tenders asked for both by schedule and on bulk tender basis, on which system was the contract awarded and for what reason in each case.

5. What alterations have been made in any of the works since letting of contract, and at what increased or decreased cost. Presented 9th March, 1911.—*Mr. White (Renfrew).. .. ..Not printed.*

77*n*. Return to an Order of the House of Commons, dated 6th March, 1911, for a copy of the report of the engineers who investigated overclassification, overbreak, or other alleged over allowances on progress or final estimate, on the Eastern Division of the Transcontinental Railway, the evidence taken, or other data collected, and of all letters, instructions, agreements, plans, drawings, photographs, memoranda and writings sent, given, had or used in connection with said investigation, not already brought down, together with a reference to the previous return where papers are already down; also a copy of the previous report made by Messrs. Schreiber, Kelligher and Lumsden immediately before Mr. Lumsden's resignation. Presented 16th March, 1911.—*Mr. Lennox.. .. ..Not printed*

CONTENTS OF VOLUME 23—*Continued.*

77o. Return to an Order of the House of Commons, dated 13th March, 1911, for a Return prepared upon the lines of Sessional Papers No. 16i of the 26th April, 1909, relating to the Eastern Division of the Transcontinental Railway, showing the actual expenditure upon each of the scheduled items upon each of the 21 contracts for construction of this division, down to the latest estimate made upon each contract, and the estimated quantity of work to be done and material to be furnished as to each of these items, and the estimated cost to complete the contract in each case. Presented 10th April, 1911.—*Mr. Lennox*.. .. ..*Not printed.*

77p. Return to an Address of the Senate dated 23rd March, 1911, for a copy of the Order in Council dated 23rd June, 1910, transferring from the Government to the National Transcontinental Railway Commission, the spur line between the Quebec bridge and the city of the same name. Presented 19th April, 1911.—*Hon. Mr. Landry.*
Not printed.

78. For approval by the House under section 17 of the Yukon Act, Chapter 63 of the Revised Statutes of Canada, 1906, a copy of an ordinance made by His Excellency the Governor General in Council, in virtue of the provisions of Section 16 of the said Chapter 63, on the 9th day of December, 1909, and intituled: "An ordinance to rescind an Ordinance respecting the imposition of a tax upon ale, porter, beer or lager beer imported into the Yukon Territory Presented 13th January, 1911, by Hon. Frank Oliver.. .. ..*Not printed.*

79. Return under Section 88 of the Northwest Territories Act, Chapter 62, Revised Statutes of Canada. Presented 16th January, 1911, by Hon. Frank Oliver.. .. ..*Not printed.*

80. Return to an Order of the House of Commons, dated 5th December, 1910, for a copy of all correspondence between the mover and any other persons, corporations and municipal as well as other public bodies, and the Department of Railways and Canals, respectisg the reconstruction and alteration of the Canadian Pacific Railway Company's bridge across the St. Lawrence river at Lachine, P.Q. Presented 16th January, 1911.—*Mr. Monk*.. .. ..*Not printed.*

81. Report of the Commissioner, Dominion Police Force, for the year 1910. Presented 17th January, 1911, by Sir Allen Aylesworth.. .. ..*Not printed.*

82. Return to an order of the House of Commons, dated 7th December, 1910, for a copy of all correspondence exchanged between the government and the Phœnix Bridge Company in connection with the payment by said company of $100,000 in discharge of claims *re* contract. Presented 16th January, 1911.—*Mr. Ames*.. .. ..*Not printed*

83. Return to an order of the House of Commons, dated 14th March, 1910, for a return showing the number of accidents to trains of the I.C.R. for ten months, from 1st April, 1908, to 31st December, 1908; the number of persons killed or injured in each of such accidents for ten months, from 1st April, 1908, to 31st December, 1908; and the cost of each of such accidents to the I. C. R., respectively, for repairs, property destroyed, compensation to passengers, and for compensation to shippers for freight and baggage. Presented 16th January, 1911.—*Mr. Stanfield*.. .. ..*Not printed.*

83a. Return to an order of the House of Commons, dated 14th March, 1910, for a return showing the number of accidents to trains on the I. C. R. between 1st April, 1909, and present date, and the location and particulars of each; the number of persons killed or injured in each of such accidents since 1st April, 1909, to date; and the cost of each of such accidents to the I. C. R., respectively, for repairs, property destroyed, compensation to passengers, and for compensation to shippers for freight and baggage Presented 16th January, 1911.—*Mr. Stanfield*.. .. ..*Not printed.*

CONTENTS OF VOLUME 23—*Continued.*

83*b*. Return to an order of the House of Commons, dated 5th December, 1910, showing all data, statements, estimates, recommendations and reports with regard to an Intercolonial railway renewal equipment account, and as to the initiation of such account and the operation thereof to the present time.

2. A copy of all correspondence with the Auditor General and other persons in regard thereto.

3. A copy of all correspondence, inquiries and investigations by or on behalf of the Auditor General as to the need for such account, and as to the sufficiency or otherwise of moneys carried to such account, and also as to the application of such moneys.

4. The same returns as to the maintenance of rails account; and the same returns as to a maintenance of bridges account, also as to any other items of maintenance, and as to any recommendations regarding the adoption of such accounts. Presented 16th January, 1911.—*Mr. Barker*.. .. ..*Not printed.*

83*c*. Return to an order of the Senate dated 4th May, 1910, calling for the following information:—

1. Were tenders asked for, in 1908 and 1909, for the purchase of railway sleepers for the use of the Intercolonial railway, and were contracts awarded to the lowest tenderer?

2. Who had these contracts, and what is the name of each tendered, and also the amount of each tender?

3. Did the Department of Railways and Canals, in 1908 and 1909, award any contracts whatsoever for the purchase of the said sleepers and what price was paid to each contractor, and who had these contracts?

4. In 1908 and 1909, did the Department of Railways and Canals ask for tenders for the purchase of sleepers made of spruce, white, gray and yellow, as well as of birch, ash, poplar, &c.?

5. What quantity of these sleepers, for each kind of wood, was accepted and paid for in 1908 and 1909, and does the department propose to continue the system of purchasing these kinds of wood?

6. Who bought these sleepers of spruce, birch, ash, poplar, &c., and who gave the orders to receive these kinds of sleepers, and who received them and stamped them for the Intercolonial railway?

7. In 1909, did the department ask for tenders for sleepers of cedar, cyprus and hemlock? If so, who had these contracts and were these contracts granted to the lowest bidders, and what quantities were actually furnished by each contractor?

8. What quantity of sleepers has been furnished up to this date—
   (*a*) by the contractors for New Brunswick; and
   (*b*) by the contractors for Nova Scotia and for the province of Quebec, respectively?

9. Did the government by order in council authorize Messrs. Pottinger, Burpee or Taylor of Moncton, to purchase sleepers of spruce of all kinds and dimensions, and to cause these kinds of sleepers to be distributed in the district of Quebec, and notably in the district of River du Loup and Isle Verte?

10. What price did the department pay for the sleepers of spruce, hemlock, cedar, birch and poplar, &c.? Who is the contractor therefor? Who received and inspected the said sleepers?

11. Does the department know that these sleepers are absolutely unfit to be used in a railway, and that these sleepers are at the present time distributed along the Intercolonial railway to be used upon the main track?

CONTENTS OF VOLUME 23 *Continued.*

12. How much a carload does the freight of sleepers sent from New Brunswick cost in the district of Quebec? Presented 3rd February, 1911.—*Hon. Mr. Landry.* *Not printed.*

84. Return to an order of the House of Commons, dated 11th January, 1911, for a return showing the respective quantities of each of the staple varieties of fish landed by Canadian Atlantic fishermen yearly, since 1870, and the respective yearly values thereof. Presented 16th January, 1911.—*Mr. Jameson*.. .. ..*Not printed.*

85. Return to an order of the House of Commons, dated 7th December, 1910, for a copy of all letters, telegrams, correspondence, resolutions, memorials, reports, and all other papers in the possession of the government, not already brought down, regarding otter, beaver, or steam trawling, and the operations of the trawlers *Wren* and *Coquette* in the waters of the Northumberland strait, or elsewhere, in Nova Scotia. Presented 16th January, 1911.—*Mr. Chisholm* (*Antigonish*).. .. ..*Not printed.*

86. Return to an order of the House of Commons, dated 7th December, 1910, for a return showing the revenue of the post offices of Acton Vale, Upton and St. Pie, in the county of Bagot, province of Quebec, since the year 1903 up to 1910 inclusively. Presented 17th January, 1911.—*Mr. Monk*.. .. ..*Not printed*

86a. Return to an order of the House of Commons, dated 16th January, 1911, for a copy of all instructions or communications from the Department of Public Works or any officer thereof, or the minister of public works, to the chief architect, or any other architect, with respect to the preparation of plans for the construction of a post office building at Parrsboro, Nova Scotia, and all other post office buildings or public buildings to be used wholly or in part by the Post Office Department, for which votes have been passed during the period from 1st January, 1908, to 31st December, 1910 Presented 20th April, 1911.—*Mr. Rhodes*.. .. ..*Not printed.*

87. Return to an address of the Senate dated 22nd April, 1910, for:—

1. Copies of all orders in council or of every order of the Department of Justice and of the Department of Public Works, and of all the correspondence exchanged between the government, the Departments of Justice and Public Works, the Bank of Montreal, the firm of Carrier & Lainé, of Lévis, and all other persons, on the subjects of—

(*a*) The acquisition by the government of the property of the firm of Carrier & Lainé, at the time of the sale thereof by the sheriff in 1908;

(*b*) the subsequent expropriation, for purposes of public utility, of the same property, which had fallen into the hands of the bank of Montreal;

(*c*) its definite purchase from the Bank of Montreal by the government;

(*d*) the appointment of an agent to represent the government at the sale by the sheriff;

(*e*) the appointment of experts for proceeding with the expropriation of the lands in question;

2. Copies of all reports submitted, directly or indirectly, to the government, or in its possession, by the experts hereinbefore mentioned, or by the arbitrators to whom the Bank of Montreal and the firm of Carrier & Lainé had submitted their differences, or by the various advocates or agents acting in the name and in the interests of the government.

3. Copies of the various contracts entered into between La Banque du Peuple and the People's Bank of Halifax in 1905, between the government and the bank of Montreal, in 1909, between the government and Mr Ernest Cann, who had become the

CONTENTS OF VOLUME 23—*Continued.*

lessee of the government, for a period of thirty years, of the lands and buildings formerly the property of Carrier & Lainé.

4. Copies of all documents whatsoever and of a correspondence relating to the various transactions aforesaid, and also a statement showing all the sums of money paid by the government with respect to such transactions, with the names of the persons to whom such sums were paid, and the amounts paid to each of them, and for what particular object. Presented 11th January, 1911.—*Hon. Mr. Landry.*

Not printed.

87*a*. Supplementary return to an address of the Senate dated 22nd April, 1910, for:—

1. Copies of all orders in council or of every order of the department of justice and of the department of public works, and of all the correspondence exchanged between the government, the department of justice and public works, the bank of Montreal, the firm of Carrier & Lainé, of Lévis, and all other persons, on the subject of—

(*a*) The acquisition by the government of the property of the firm of Carrier & Lainé, at the time of the sale thereof by the sheriff in 1908;

(*b*) the subsequent expropriation, for purposes of public utility, of the same property, which had fallen into the hands of the Bank of Montreal;

(*c*) its definite purchase from the bank of Montreal by the government;

(*d*) the appointment of an agent to represent the government at the sale by the sheriff;

(*e*) the appointment of experts for proceeding with the expropriation of the lands in question;

2. Copies of all reports submitted, directly or indirectly, to the government, or in its possession, by the experts hereinbefore mentioned, or by the arbitrators to whom the bank of Montreal and the firm of Carrier & Lainé had submitted their differences, or by the various advocates or agents acting in the name and in the interests of the government.

3. Copies of the various contracts entered into between La Banque du Peuple, and the People's Bank of Halifax in 1905, between the government and the bank of Montreal, in 1909, between the government and Mr. Ernest Cann, who had become the lessees of the government, for a period of thirty years, of the lands and buildings formerly the property of Carrier & Lainé.

4. Copies of all documents whatsoever and of all correspondence relating to the various transactions aforesaid, and also a statement showing all the sums of money paid by the government with respect to such transactions, with the names of the persons to whom such sums were paid, and the amounts paid to each of them, and for what particular object. Presented 18th January, 1911.—*Hon. Mr. Landry.*

Not printed.

87*b*. Further supplementary return to an address of the Senate dated 22nd April, 1910, for

1. Copies of all orders in council or of every order of the Department of Justice and of the Department of Public Works, and of all the correspondence exchanged between the government, the Departments of Justice and Public Works, the Bank of Montreal, the firm of Carrier & Lainé, of Lévis, and all other persons, on the subjects of—

(*a*) The acquisition by the government of the property of the firm of Carrier & Lainé, at the time of the sale thereof by the sheriff in 1908;

(*b*) the subsequent expropriation, for purposes of public utility, of the same property, which had fallen into the hands of the bank of Montreal;

(*c*) its definite purchase from the Bank of Montreal by the government;

CONTENTS OF VOLUME 23—*Continued.*

(*d*) the appointment of an agent to represent the government at the sale by the sheriff;

(*e*) the appointment of experts for proceeding with the expropriation of the lands in question;

2. Copies of all reports submitted, directly or indirectly, to the government, or in its possession, by the experts hereinbefore mentioned, or by the arbitrators to whom the Bank of Montreal and the firm of Carrier & Lainé had submitted their differences, or by the various advocates or agents acting in the name and in the interests of the government.

3. Copies of the various contracts entered into between La Banque du Peuple and the People's Bank of Halifax in 1905, between the government and the Bank of Montreal in 1909, between the government and Mr. Ernest Cann, who had become the lessee of the government, for a period of thirty years, of the lands and buildings formerly the property of Carrier & Lainé.

4. Copies of all documents whatsoever and of all correspondence relating to the various transactions aforesaid, and also a statement shewing all the sums of money paid by the government with respect to such transactions, with the names of the persons to whom such sums were paid, and the amounts paid to each of them, and for what particular object. Presented 27th January, 1911.—*Hon. Mr. Landry.*

Not printed.

87*e*. Supplementary return to an address of the Senate dated 22nd April, 1910, for copies:—

1. Copies of all orders in council or of every order of the Department of Justice and of the Department of Public Works; and of all the correspondence exchanged between the government, the Departments of Justice and Public Works, the Bank of Montreal, the firm of Carrier & Lainé, of Lévis, and all other persons, on the subjects of—

(*a*) The acquisition by the government of the property of the firm of Carrier & Lainé, at the time of the sale thereof by the sheriff in 1908;

(*b*) the subsequent expropriation, for purposes of public utility, of the same property, which had fallen into the hands of the bank of Montreal;

(*c*) its definite purchase from the Bank of Montreal by the government;

(*d*) the appointment of an agent to represent the government at the sale by the sheriff;

(*e*) the appointment of experts for proceeding with the expropriation of the lands in question;

2. Copies of all reports submitted, directly or indirectly, to the government, or in its possession, by the experts hereinbefore mentioned, or by the arbitrators to whom the Bank of Montreal and the firm of Carrier & Lainé had submitted their differences, or by the various advocates or agents acting in the name and in the interests of the government.

3. Copies of the various contracts entered into between La Banque du Peuple and the People's Bank of Halifax in 1905, between the government and the Bank of Montreal in 1909, between the government and Mr. Ernest Cann, who had become the lessee of the government, for a period of thirty years, of the lands and buildings formerly the property of Carrier & Lainé.

4. Copies of all documents whatsoever and of all correspondence relating to the various transactions aforesaid, and also a statement showing all the sums of money paid by the government with respect to such transactions, with the name of the persons to whom such sums were paid, and the amounts paid to each of them, and for what particular object. Presented 7th February, 1911.—*Hon. Mr. Landry.*

Not printed.

CONTENTS OF VOLUME 23—*Continued.*

87*d* Return to an order of the Senate dated 9th March, 1911, for a return of copy of the contract entered into between the Bank of Montreal and the People's Bank of Halifax, in 1905, in connection with the financial situation and with the obligations of the firm of Carrier-Laine, a copy of which contract was handed over to the government at the time of the financial transactions concluded between the Bank of Montreal and the government in 1909. Presented 4th April, 1911.—*Hon. Mr. Landry.*
Not printed.

88. Return to an address of the Senate dated 24th November, 1910, for copies of all orders in council, memoranda or other correspondence respecting the resignation of the present Lieutenant Governor of the province of Quebec, the apopintment of his successor, the application for leave of absence, and the appointment of an administrator during the absence from the country of His Honour Sir Pantaleon Pelletier. Presented 11th January, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

88*a*. Return to an address of the Senate dated 8th February, 1911, for a copy of the order in council extending, for a period of two months, the leave of absence already obtained by Sir Pantaleon Pelletier, together with copy of all the correspondence on the subject between the government, His Honour the Lieutenant Governor of the province of Quebec, and the present administrator of the said province. Presented 14th February, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

89. Return to an order of the House of Commons, dated 16th January, 1911, for a copy of all correspondence, letters, telegrams, reports and papers of every description between the liquidators of the Charing Cross Bank or of A. W. Carpenter or anyone on their behalf, and any member of the government, or official thereof, regarding the affairs of the Atlantic, Quebec and Western railway, the Quebec Oriental railway, or the new Canadian Company, limited. Presented 18th January, 1911.—*Mr. Ames.*
Not printed.

90. Return to an order of the House of Commons, dated 14th December, 1910, for a return showing how many wireless telegraph stations are owned by the government where are they located, the cost of each, and the revenue derived from each; what stations are leased, to whom they are leased, the amount of rental received each year and the period covered by said lease. Presented 18th January, 1911.—*Mr. Armstrong.*
Not printed.

91. Return to an order of the House of Commons, dated 15th March, 1910, for a return showing the names of all persons who have been fined for breach of fisheries regulations in the coast waters of the counties of Pictou and Cumberland, Nova Scotia, and Westmorland, New Brunswick, during the years 1907, 1908 and 1909, together with a full statement of the penalties inflicted, moneys collected, and fines or portion thereof remitted, if any, in each case. and for a copy of all instructions issued, reports, correspondence and documents relating in any manner thereto. Presented 18th January, 1911.—*Mr. Rhodes*.. .. ..*Not printed.*

91*a*. Return to an order of the House of Commons, dated 11th January, 1911, for a return showing the names of all persons who have been fined for breach of fishery regulations in the coast waters of Prince Edward Island since the year 1900 up to this date, together with a statement of the penalties inflicted, moneys collected, and fines or portions thereof remitted, in each case; and for a copy of all instructions issued, reports, correspondence and documents relating in any manner thereto. Presented 6th March, 1911.—*Mr. Fraser*.. .. ..*Not printed.*

CONTENTS OF VOLUME 23—*Continued.*

92. Return to an order of the House of Commons, dated 16th January, 1911, for a copy of the mailing list, and names of all parties to whom the Department of Labour mailed or otherwise sent copies of the *Labour Gazette* during the year 1910, and of the names of all correspondents that report to the department on labour topics for the purposes of the *Labour Gazette*. Presented 18th January, 1911.—*Mr. Currie (Simcoe).*

Not printed.

93. Return to an order of the House of Commons, dated 7th December, 1910, for a copy of all correspondence and other papers and documents that have passed between the government and any party or parties during the past year in connection with the dredging of the Napanee river; also any instruction given by the minister in connection therewith? Presented 18th January, 1911.—*Mr. Wilson (Lennox and Addington)*.. .. .. .

CONTENTS OF VOLUME 23—*Concluded.*

94*a*. Return to an order of the House of Commons, dated 26th January, 1911, for a return giving the names of the lighthouse keepers on the St. Lawrence, between Quebec and Montreal, since the 12th April, 1887, and what yearly salary has been paid them respectively since that date. Presented 27th February, 1911.—*Mr. Blondin.*
Not printed.

95. Return to an address of the House of Commons, dated 5th December, 1910, a copy of a Report by Mr. W. T. R. Preston, Commissioner of Trade and Commerce in Holland *re* the establishment of a Netherland loan company in Canada; of all communications between the Department of Trade and Commerce and any other department of the government and Mr. Preston on the subject matter of this report; a copy of all correspondence between Mr. Preston and any person or persons in Holland regarding proposed operations of a Dutch Loan Company in Canada, and a copy of correspondence or communications of any nature whatsoever between the government or the department with any persons relating to this question. Presented 19th January, 1911.—*Mr. Monk*.. .. ..*Not printed.*

95*a*. Return to an order of the House of Commons, dated 22nd November, 1909, for a copy of all correspondence, petitions, reports written representations in the hands of the government, or any department of the same, concerning the commercial or trade mission to Japan of W T. R. Preston, as Canadian Trade Commissioner for Canada, and of the reports of said commissioner, as well as all other reports and despatches received by the government in connection with the execution of said mission. Presented 6th February, 1911.—*Monk*.. .. ..*Not printed.*

95*b*. Supplementary return to an order of the House of Commons, dated 22nd November, 1909, for a copy of all correspondence, petitions, reports, written representations in the hands of the government, or any department of the same, concerning the commercial or trade mission to Japan of W. T. R. Preston, as Canadian Trade Commissioner for Canada, and of the reports of said commissioner, as well as all other reports and dispatches received by the government in connection with the execution of said mission. Presented 13th February, 1911.—*Mr. Monk*.. .. ..*Not printed.*

95*c*. Return to an order of the House of Commons, dated 6th February, 1911, for a copy of all correspondence between any department of the government and Mr. W. T. R. Preston, Trade Commissioner in Holland, regarding the Netherlands Land Company, since the date of the last resolution adopted by this House, calling for the same at the present session; also a copy of the official document issued by the government respecting the high regard in which western farm lands are held by some of the principal loan and investment companies. Presented 23rd February, 1911.—*Mr. Monk*.. .. ..*Not printed.*

CONTENTS OF VOLUME 24.

95*d*. Copy of the Treaty of Commerce and Navigation between Great Britain and Japan, signed at London, 3rd April, 1911. Presented 20th April, 1911, by Hon. W. S. Fielding.
Printed for sessional papers.

95*e*. Papers with reference to treaty with Japan. Presented 17th May, 1911, by Hon. W. S. Fielding.. .. ..*Printed for sessional papers.*

96. Return to an order of House of Commons, dated 11th January, 1911, for a copy of all applications, reports, records, correspondence, &c., in connection with the entry or cancellation proceedings in respect of the s.w. ¼ section 10, township 38, range 15, west 2nd meridian. Presented 19th January, 1911.—*Mr. Lake*.. .. .. ..*Not printed.*

CONTENTS OF VOLUME 24—*Continued.*

96*a*. Return to an order of the House of Commons, dated 7th December, 1910, for a copy of all applications, correspondence, and other documents in reference to sections 11, 12, 14, 22, 24, 28, 30, 32, 34, and 36 in township 10, range 22, west of the 4th meridian. Presented 1st February, 1911.—*Mr. Wallace*.. .. ..*Not printed.*

96*b*. Return to an order of the House of Commons, dated 8th February, 1911, for a copy of all letters, telegrams and correspondence between the Department of the Interior or any of its officials and Mr. J. Krenzer, or their soliciter, or one Mr. Wolf, and of all reports of the officials of the said department respecting the south half section 28, township 27, range 18, west of the 2nd principal meridian, and also all correspondence, letters and telegrams between the department and one Thomas Greenway or his brother respecting the said lands; and all correspondence between the department and its officials respecting the said lands; and all papers, reports, correspondence and documents put in the files of the department, since the 1st of April, in relation to the dispute between said Krenzer and said Greenway. Presented 22nd February, 1911.—*Mr. Staples*.. .. ..*Not printed.*

97. Minutes of conference held at Washington the 9th, 10th, 11th and 12th January, 1911, as to the application of the award delivered on the 7th September, 1910, in the North Atlantic coast fisheries arbitration to existing regulations of Canada and Newfoundland. Presented 19th January, 1911. by Sir Allen Aylesworth.

Printed for both distribution and sessional papers.

97*a*. Copy of order in council approved by His Excellency the Governor General in Council on the 21st January, 1911, relating to changes in the fishery regulations under section 54 of "The Fisheries Act," chapter 45 of the revised statutes of Canada, 1906, in conformity to the agreement made at the conference held at Washington, January, 1911 Also dspatch from Mr. Bryce to Lord Grey. Presented 25th January, 1911, by Hon. L. P. Brodeur... .. ..*Printed for both distribution and sessional papers.*

97*b*. (1) Copy of Hague Tribunal Award concerning Atlantic fisheries given 7th September, 1910;

(2) Extracts from the special fishery regulations for the province of Quebec;

(3) Protocol 30 containing statements of the acts of Newfoundland and Canada objected to by the United States authorities.

On motion of Mr. Brodeur, it was ordered, That Rule 74 be suspended, and that the foregoing papers in connection with the "Hague Tribunal Award," be printed forthwith, and put under the same cover as the documents the printing of which was ordered at the sitting of the House on the 25th January, 1911. Presented 27th January, 1911, by Hon. L. P Brodeur.

Printed for both distribution and sessional papers.

98. Return to an order of the House of Commons, dated 11th January, 1911, for a copy of all memorials, petitions and requests received by the government since last session advocating the enlargement of the Welland canal, as well as all memorials, petitions, resolutions, &c., favouring the construction of the Montreal and Georgian Bay canal. Presented 20th January, 1911.—*Mr. Hodgins*.. .. ..*Not printed.*

98*a*. Return to an order of the House of Commons, dated 11th January, 1911, for a copy of the lease made between the government and the Canadian Light and Power Company relating to the Beauharnois canal. Presented 20th January, 1911.—*Mr. Lortie.*

Not printed.

CONTENTS OF VOLUME 24—*Continued.*

98*b*. Return to an order of the House of Commons, dated 23rd January, 1911, for a return showing in detail:—1. All sums paid by the concessionaires or grantees of the Beauharnois canal as rental or royalties upon the rights conveyed to them by the Crown on the Beauharnois canal, or paid by their assigns in the enjoyment of the said rights, since the concession.

2. Of all sums paid or expended by the government upon the said canal since the date of the said concession.

3. Of all sums actually due the Crown by the grantees or assigns for the use of the said canal or in connection therewith. Presented 7th February, 1911.—*Mr. Monk.*
Not printed.

98*c*. Supplementary return to an order of the House of Commons, dated 11th January, 1911, for a copy of all memorials, petitions and requests received by the government since last session advocating the enlargement of the Welland canal, as well as all memorials, petitions, resolutions, &c., favouring the construction of the Montreal and Georgian Bay canal. Presented 10th February, 1911.—*Mr. Hodgins*.. ..*Not printed.*

98*d*. Return to an order of the House of Commons, dated 1st February, 1911, for a copy of all leases, agreements and contracts made with any person, persons, company or corporations, granting by way of lease or otherwise, any water powers on or along the Trent Valley canal; together with any correspondence in connection with same. Presented 9th March, 1911.—*Mr. Roche*.. .. ..*Not printed.*

98*e*. Return to an address of the House of Commons, dated 23rd January, 1911, for a copy of all correspondence concerning the lease or alienation of the Beauharnois canal, of all reports called for by the government and made concerning the said alienation by experts, officers of the departments or others, of all orders in council respecting said alienation and of the deed or deeds between the Crown and the concessionaires embodying the said lease or alienation and respecting also any transfers of their rights and privileges by the original grantees. Presented 14th March, 1911.—*Mr. Monk*.. .. ..*Not printed.*

99. Return to an order of the House of Commons, dated 12th December, 1910, for a statement showing the amounts paid by the several government departments since 1st January, 1908, to the following law firms, or to any member thereof, and what has been in each case the nature of the service rendered; Messrs. Dandurand, Hibbard & Company, Montreal; Stewart, Cox & McKenna, Montreal; Smith, Markay & Company, Montreal; Hibbard, Boyer & Gosselin, Montreal. Presented 23rd January, 1911.—*Mr. Reid (Grenville)*.. .. ..*Not printed.*

100. Return to an order of the House of Commons, dated 14th December, 1910, for a return showing the cost of the Senate of Canada for each year since the fiscal year 1896. under the headings of number of senators, indemnity, travelling expenses, printing, staff, and contingencies. Presented 23rd January, 1911.—*Hon. Mr. Foster.*
Not printed.

101. Return to an order of the House of Commons, dated 16th January, 1911, for a return showing the names of the United States consuls or consular officers in the Dominion, the districts over which each has consular authority, the scale of fees which is exacted by them for certification of exports to the United States and the number of certified lots of goods exported under certificate during the year 1910. Presented 24th January, 1911.—*Mr. Rhodes*.. .. ..*Not printed.*

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102. Return to an order of the House of Commons, dated 7th December, 1910, for a copy of all customs entries made at Vancouver, British Columbia, for goods entered free of duty by each of the following parties during each of the years 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909 and 1910:—Robert Kelly, by himself, agent, or broker for him; Kelly, Douglas & Company, or agent, or broker, for them; and by any or all of the departments of the Dominion government; also by any other person, firm or firms, or broker, having been allowed to make free entry at Vancouver, British Columbia, during above years, declared as for supply to the Dominion government. Presented 24th January, 1911.—*Mr. Barnard*.. .. ..*Not printed.*

102*a*. Return to an order of the House of Commons, dated 23rd January, 1911, for a return showing the average value for duty in 1896 and 1910, respectively, of the unit of each article or commodity enumerated in the schedules of the Customs Act, on which an ad valorem duty was payable together with the rate of duty, the amount on which duty was paid, and the amount of duty paid for each year, with the totals, respectively. Presented 13th February, 1911.—*Hon. Mr. Foster*.. .. ..*Not printed.*

103. Return to an order of the House of Commons, dated 7th December, 1910, for a return showing the names, respective ages, when appointed, and pay received, by the sessional employees of the House of Commons. Presented 25th January, 1911.—*Mr. Sproule*.. .. ..*Not printed.*

103*a*. Return to an order of the House of Commons, dated 13th February, 1911, for a return showing the names and addresses of all sessional employees of the House of Commons, beginning with the session immediately subsequent to the elections of 1896, and for each year succeeding, to and including the present session, their duties in each case, their home addresses, their salaries, their transfers in each and every case to either other appointments of the sessional staff or to permanent employment in any department, the dates of each such appointment or transfer, upon whose recommendation each such appointment was made, their dismissals, if any, and the reasons therefor. Presented 28th March, 1911.—*Mr. Sharpe (Ontario)*.. .. .. ..*Not printed.*

104. Return to an order of the House of Commons, dated 5th December, 1910, for a return showing the date of the opening and closing of parliament for each year from 1896 to 1910, and the number of days the House and Senate was in session for each of these years. Presented 27th January, 1911.—*Hon. Mr. Foster*.. .. ..*Not printed.*

105. Return to an order of the House of Commons, dated 23rd January, 1911, for a copy of all letters, telegrams, correspondence, petitions and communications referring in any manner to the establishment or maintenance of the mail route from Athol post office to South Athol, county of Cumberland, N.S Presented 27th January, 1911.—*Mr. Rhodes*.. .. ..*Not printed.*

106. Return to an order of the House of Commons, dated 11th January, 1911, for a copy of all correspondence, telegrams or memoranda had between this government, or any member thereof, and the provincial government of Alberta and Saskatchewan, or either of them, or any of their members, in reference to securing control by such provincial governments of the lands, timber, water powers, coal and other minerals, or any of the natural resources which exist within the respective boundaries of said provinces. Presented 27th January, 1911.—*Mr. Herron*.. .. ..*Not printed.*

106*a*. Return to an order of the House of Commons, dated 13th February, 1911, for copies of any correspondence between the government of the Dominion, or any member thereof, and the provincial governments of Alberta and Saskatchewan, or either of

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them, or any of their members, in reference to securing control by such provincial governments of the lands, timber, water powers, coal and other minerals, or any of the natural resources which exist within the respective boundaries of said provinces, other than school lands. Presented 20th February, 1911.—*Mr. Lake.. ..Not printed.*

107. Return to an order of the House of Commons, dated 23rd January, 1911, for a copy of all correspondence between the Minister of Justice and the Attorney General of Nova Scotia in respect to the proposed change in the constitution of the Admiralty Court for that province. Presented 30th January, 1911.—*Mr. McKenzie.. .. .. Not printed.*

108. Return to an address of the House of Commons, dated 5th December, 1910, for a copy of the proclamation of the Governor in Council naming a day for the coming into force of an Act intituled "An Act to amend the Railway Act, 1903," chapter 31 of the Statutes of Canada of 1904 as provided for by Section 2 of that Act. Presented 30th January, 1911.—*Mr. Lennox.. .. ..Not printed.*

109. Return to an address of the House of Commons, dated 11th January, 1911, for a statement giving a concise history of the negotiations in regard to reciprocal trade carried on since 1900 between the governments of Canada and of the Australian Commonwealth, together with a copy of official telegrams upon the same subject exchanged between the two governments, or between the official representatives thereof, since the Imperial Conference of 1907. Presented 31st January, 1911. —*Mr. Ames.. .. ..Not printed.*

109a. Tariff relations between the United States and the Dominion of Canada, 1911. Presented 1st February, 1911, by Hon. W. S. Fielding.. .. ..*Not printed.*

109*b*. Tariff relations between the United States and the Dominion of Canada, correspondence and statements, 1911. Presented 6th February, 1911, by Hon. W. S. Fielding. *Printed for both distribution and sessional papers.*

109*c*. Return to an order of the House of Commons, dated 27th February, 1911, for a return showing respectively, the total trade, the imports, the exports for each year from 1846 to 1876, both inclusive, between the British North American possessions, except Newfoundland, and the United Kingdom, the United States of America and other countries respectively. Presented 14th March, 1911.—*Mr. Borden.. .. .. ..Not printed.*

110. Return to an order of the House of Commons, dated 16th January, 1911, for a copy of all correspondence between the Finance Department, or any of its officers ,or any members of the government, and any persons or corporations with reference to the incorporation of the Farmer's Bank, or to circumstances in connection therewith. Presented 1st February, 1911.—*Hon. Mr. Foster.. .. ..Not printed.*

110*a*. Return to an order of the House of Commons, dated 23rd January, 1911, for a copy of all correspondence between the government or any member thereof, or any official of the Department of Finance, and any person or association, with reference to the conduct and affairs of the Farmer's Bank since the date of its organization. Presented 1st February, 1911.—*Hon. Mr. Foster.. .. ..Not printed.*

110*b*. Return to an order of the House of Commons, dated 23rd January, 1911, for a copy of the full report and finding of the curator of the Farmer's Bank, up to the time of his appointment as liquidator of the same by the shareholders for the requisition of which, authority is given to the Minister of Finance by Section 122 of the Bank Act. Presented 1st February, 1911.—*Hon. Mr. Foster.*

Printed for both distribution and sessional papers.

CONTENTS OF VOLUME 24—*Continued.*

110c. Return to an address of the House of Commons, dated 16th January, 1911, for a copy of all applications, petitions, letters, telegrams and other documents and correspondence, and all orders in council and certificates, relating to or connected with the establishment of the Farmer's Bank of Canada and its operations. Presented 1st February, 1911—*Mr. Taylor (Leeds).*

Printed for both distribution and sessional papers.

111. Return to an order of the House of Commons, dated 7th December, 1910, for a return showing the total cost to date of wharves at North Bay, Burks Falls and Maganatawan, Ontario; the name, date of appointment and salary of wharfinger in each case; the schedule of fees charged to public or others for use of wharf in each case; and a detailed statement of receipts for each wharf for the years 1907, 1908, 1909, giving name of party paying and for what. Presented 2nd February, 1911.—*Mr. Arthurs.*

Not printed.

112. Return to an order of the House of Commons, dated 23rd January, 1911, for a copy of all correspondence since the 1st January, 1909, with the Department of Justice or any officers of that department, making or supporting request for increase of pay to employees of the penitentiary at New Westminster; and of all reports or recommendations in that connection made by any officer of the department. Also a copy of all reports made during the period indicated, by the grand jury at New Westminster with reference to the conditions at said penitentiary. Presented 3rd February, 1911. *Mr. Taylor (New Westminster).. .. ..Not printed.*

113. Report of proceedings between the Farmers' Delegation and the Prime Minister and members of the government held in the House of Commons chamber on the 16th December, 1910, with corresponding preliminary to the meeting. Presented 6th February, 1911, by Rt. Hon. Sir Wilfrid Laurier.

Printed for both distribution and sessional papers.

113a. Report of proceedings of the deputation of fruit and vegetable growers and the Prime Minister and members of the government held in the House of Commons on the tenth February instant. Presented 21st February, 1911, by Rt. Hon. Sir Wilfrid Laurier.

Printed for both distribution and sessional papers.

113b. Memorandum presented by the meat packers of Ontario and Quebec at a meeting held with members of the government on Monday, February 13, 1911. Presented 21st February, 1911, by Rt. Hon. Sir Wilfrid Laurier.

Printed for both distribution and sessional papers.

114. Return to an address of the Senate dated 12th January, 1911, for a copy of the order in council appointing His Honour Judge Jetté, administrator of the province of Quebec during the absence of Sir Pantaléon Pelletier, as well as a copy of any instruction whatsoever in connection with such appointment. Presented 19th January, 1911.—*Hon. Mr. Landry.. .. ..Not printed.*

115. Return to an address of the Senate dated 17th January, 1911, calling for dates of publication and distribution to members of parliament of the English and French editions of the debates of the Senate and of the House of Commons from the year 1900 to date. Presented 25th January, 1911.—*Hon. Mr. Landry.. .. ..Not printed.*

115a. Return to an order of the Senate dated 17th January, 1911, for a copy of a return showing, year by year, from 1900, up to the present day, the date of the publication and distribution to members of parliament:—

1 Of the English edition of the Journals of the Senate.

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2. Of the French edition of the same.
3. Of the English edition of the Journals of the House of Commons.
4. Of the French edition of the same. Presented 14th February, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

115b. Return to an order of the Senate dated 17th January, 1911, for a copy of a return showing, year by year, from 1900, up to the present day, the date of the publication and distribution to members of parliament:—
1. Of the English edition of the Jounrnals of the Senate.
2. Of the French edition of the same.
3. Of the English edition of the Journals of the House of Commons.
4. Of the French edition of the same. Presented 14th February, 1911.—*Hon. Mr Landry*.. .. ..*Not printed.*

116. Return to an address of the Senate dated 17th January, 1911, for a statement of the number of applications for and number of divorces granted by the parliament of Canada from 1894 to 1910 inclusive. Presented 24th January, 1911.—*Hon. Mr. McSweeny*.. .. ..*Not printed.*

117. Return to an address of the Senate dated 22nd April, 1910, showing the expenses incurred, and the date of each of the payments made by the government for the electric installation in each of the rooms of the immigration officer at Quebec during the years 1908 and 1909. Presented 31st January, 1911.—*Hon. Mr. Landry.*
1911.—*Mr. Lennox*.. .. ..*Not printed.*

118. Return to an order of the House of Commons, dated 16th January, 1911, for a return showing what amount the government paid Mr. F. H. Chrysler, K.C., for professional services between May, 1896, and 31st March, 1909, and what amount during the financial year ending 31st March, 1910; what amount since 31st March, 1910; what amount is now due by the government to Mr. Chrysler; and in what transactions or cases Mr. Chrysler is now engaged in for the government. Presented 6th February, 1911.—*Mr. Blain*.. .. ..*Not printed.*

119. Return to an order of the House of Commons, dated 25th January, 1911, for a statement showing:—
1. How much wheat was exported from Canada for the crop years ending 31st August, 1908, 1909 and 1910.
2. How much wheat was exported from Canada through United States ports during 1908, 1909 and 1910, naming said ports, and amount exported from each port.
3. How many terminal grain elevators are there at Port Arthur and Fort William, and what is the name of each.
4. How much grain was shipped through each elevator at Port Arthur and Fort William during each year 1908, 1909 and 1910, and what are the names of the elevators respectively.
5. How much wheat was exported from Canada during each crop year 1908, 1909 and 1910, not passing through the terminal elevators at Port Arthur and Fort William.
6. How many men are employed by the government in connection with the terminal elevators at Port Arthur and Fort William, and what is the total salary paid the men per year Presented 7th February, 1911.—*Mr. Schaffner.*
Printed for sessional papers.

120. Return to an order of the House of Commons, dated 18th January, 1911, for a return showing how many appointments have been made by the government from the con-

CONTENTS OF VOLUME 24—*Continued.*

stituency of South Grey since 1904, their names, to what positions appointed, and the salary or remuneration in each case. Presented 9th February, 1911.—*Mr. Blain.*
Not printed.

120a. Return to an order of the House of Commons, dated 25th January, 1911, for a return showing the full names of the permanent and temporary employees appointed at Quebec since the first of January, 1905, in the following departments: Post Office, Customs, Inland Revenue and Public Works; the age and place of residence of each of these employees at the time of their appointment, the dates and nature of changes, promotions or increases of salary granted them since their appointment. Presented 15th February, 1911.—*Mr. Lachance*.. .. ..*Not printed.*

120b. Supplementary return to an order of the House of Commons, dated 18th January, 1911, for a return showing how many appointments have been made by the government from the constituency of South Grey since 1904, their names, to what positions appointed, and the salary or remuneration in each case. Presented 20th February, 1911.—*Mr. Blain*.. .. ..*Not printed.*

120c. Return to an order of the House of Commons, dated 23rd January, 1911, for a return showing how many appointments have been made by the government from the constituency of Wentworth since 1904, together with their names, to what positions appointed, and the salary or remuneration in each case. Presented 27th February, 1911.—*Mr. Blaine*.. .. ..*Not printed.*

121. Return to an address dated the 24th November, 1910, for copies of all orders in council, of all decisions rendered by the Military Council or some of its members, and of all correspondence concerning the guard and escort of honour applied for in August and September last on the occasion of the visit in Quebec and Montreal of His Excellency Cardinal Vannutelli. Presented 10th February, 1911.—*Hon. Mr. Landry.*
Not printed.

122. Return to an address of the Senate dated 1st February, 1911, calling for copies of petitions presented by the Quebec Board of Trade, or of the resolutions adopted by it during November and December last, and transmitted to the Right Honourable the Prime Minister of this country, together with all correspondence exchanged on the subject of these resolutions. Presented 7th February, 1911.—*Hon. Mr. Landry.*
Not printed.

123. Return to an order of the House of Commons, dated 11th January, 1911, for a copy of all letters, agreements, telegrams, or memoranda with respect to the application for water-power license on the Elbow river west of Calgary. Presented 13th February, 1911.—*Mr. McCarthy*.. .. ..*Not printed*

123a. Return to an order of the House of Commons, dated 18th January, 1911, for a copy of all correspondence had between the government, or any member thereof, and the Municipal Council of the City of Calgary, or any member thereof, regarding the conserving of the water flow of the Elbow river above the intake established by the said city in connection with their water works system. Presented 16th February, 1911.—*Mr. McCarthy*.. .. ..*Not printed.*

124. Return to an order of the House of Commons, dated 26th January, 1911, for a statement showing the amounts paid by the various departments of the government to the Sherwin-Williams Company for paints and other goods in the years 1906, 1907, 1908, 1909 and 1910. Presented 14th February, 1911.—*Mr. Boyce*.. .. .. ..*Not printed.*

CONTENTS OF VOLUME 24—*Continued.*

125. Return to an order of the Senate dated 18th January, 1911, showing

1. In 1884, did a federal statute (47 Vict., ch. 78) confirm the legal existence of the Quebec Bridge Company?

2. In 1901, did not another federal statute (1 Edward VII, ch. 81), give birth to a company known as "The Quebec Terminal and Railway Company"?

3. In 1903, after having been, for two years, completely distinct from one another, did not the two above-mentioned companies amalgamate, constituting a new company, to which a federal statute (3 Edward VII, ch. 177) gave the name of "The Quebec Bridge and Railway Company"?

4. Was it not during the same year 1903, that were signed between the Quebec Bridge and Railway Company, the agreements which gave to the government the power to substitute itself to the bridge company and to complete at a certain date the colossal enterprise of the construction of a bridge over the St. Lawrence near Quebec?

5. Was not this substitution of the government to a private company confirmed by federal legislation in 1908 at the time of the adoption by parliament of chapter 59 of 7-8 Edward VII?

6. Under the said legislation, has the government passed an order in council enacting that it take hold of the whole of the undertaking, assets, properties and concessions of the said Quebec Bridge and Railway Company?

7. When was this order in council passed?

8. What composes the whole of the undertaking, assets, properties and concessions of the said company mentioned in the laws?

9. Has any part of the said whole of the undertaking, assets, properties and concessions of the company been transferred to the Grand Trunk Pacific Railway Company, or to the National Transcontinental Commission?

10. What was the part so transferred?

11. Does it comprise the bridge or some of the railway lines from the bridge and ending at the city of Quebec or at some place on the line of the Canadian Pacific railway, on the north, and of the Grand Trunk railway on the south of the river?

12. Are not the construction of the bridge and of the railway lines from the bridge, north and south of the St. Lawrence river, under the exclusive jurisdiction of the government who have kept the entire control thereof? Presented 14th February, 1911.—*Hon. Mr. Landry*.. .. .. *Not printed.*

125*a*. Return to an address of the Senate dated 22nd February, 1911, for a copy of the order in council, dated 17th August, 1908, authorizing the transfer to the government of the Quebec bridge, and of all the assets, franchises and privileges then the property of the Quebec Bridge and Railway Company. Presented 8th March, 1911.—*Hon. Mr. Landry*.. .. .. *Not printed.*

126. Return to an order of the House of Commons, dated 7th December, 1910, for a copy of all papers, reports, valuations, plans, documents, contracts, advertisements, tenders, offers, and letters, relating to the sale and disposition of the property purchased by the government for a barracks site at Toronto, and recently sold by the government, generally known as the Baby Farm or property; and more particularly, all correspondence, valuations or opinions as to the value of the said property, and as to the method of disposal thereof; and also a copy of advertisements, number of insertions, and names of papers in which same appeared, in the possession of the Department of Militia, or any other department of the government. Presented 10th February, 1911.—*Mr. Macdonell*.. .. .. *Not printed.*

CONTENTS OF VOLUME 24—*Continued.*

127. Return to an order of the Senate dated 17th January, 1911, for a return showing, in as many distinct columns:—

1. The names of all departments obliged by law to lay before parliament reports of their annual operations.

2. The date fixed by law for the laying of the said reports before parliament.

3. The date on which the said reports have been laid for the fiscal year ending 31st March, 1910, stating whether it was the English or the French edition which was so laid.

4. The date of the publication and distribution of the French edition of the said reports.

5. The title of the reports which, up to the 15th January, 1911, nine months and a half, after the fiscal year ending the 31st March, 1910, have not yet been published in French.

6. The titles of the reports which, up to the 15th January, 1911, twenty-one months and a half after the fiscal year ending the 31st March, 1909, have not yet been published in French. Presented 16th February, 1911.—*Hon. Mr. Landry.. ..Not printed.*

128. Return to an order of the House of Commons, dated 26th January, 1911, for a return showing the date of incorporation, a copy of the Act of incorporation, and any subsequent amendments thereto, all petitions, correspondence, applications and other papers or data asking for or relating to the grant of subsidy thereto, a copy of all contracts for construction, the subsidies granted and the several payments of the same, the dates of payment and the persons to whom cheques were issued therefor, a copy of engineer's reports and certificates on which payment was authorized in each case, the number of miles completed, the number now being operated, the number of miles still to be finished, the total cost to date and the estimated cost of completion, and the present condition of the road, in the case of the Atlantic, Quebec and Western Railway Company, the Quebec and Oriental R. R. Company and the new Canadian company. Also the shareholders, directors and officers of each of these companies, the capital subscribed and paid up by each subscriber, the amounts paid out each year to directors and officers as fees and salaries, the amount paid for promotion or other expenses, in detail, for each of the above companies. In the case of any mileage operated, the yearly revenues and working expenses. Presented 17th February, 1911.—*Hon. Mr. Foster.. .. .. .

CONTENTS OF VOLUME 24—*Continued.*

128b. Further supplementary return to an order of the House of Commons, dated 23rd January, 1911, for a return showing the date of incorporation, a copy of the Act of incorporation, and any subsequent amendments thereto, all petitions, correspondence, applications and other papers or data asking for or relating to the grant of subsidy thereto, a copy of all contracts for construction, the subsidies granted and the several payments of the same, the dates of payment and the persons to whom cheques were issued therefor, a copy of engineer's reports and certificates on which payment was authorized in each case, the number of miles completed, the number now being operated, the number of miles still to be finished, the total cost to date and the estimated cost of completion, and the present condition of the road, in the case of the Atlantic, Quebec and Western Railway Company, the Quebec and Oriental R. R. Company, and the new Canadian company. Also the shareholders, directors and officers of each of these companies, the capital subscribed and paid up by each subscriber, the amounts paid out each year to directors and officers as fees and salaries, the amount paid for promotion or other expenses, in detail, for each of the above companies. In the case of any mileage operated, the yearly revenues and working expenses. Presented 28th March, 1911.—*Hon. Mr. Foster*.. .. ..*Not printed.*

129. Return to an order of the House of Commons, dated 19th January, 1910, for a return showing in the construction of drill halls or armouries, or the leasing of sites for camps of instruction, in how many and what instances municipalities, regiments, or individuals, have contributed to the cost of the same in the way of concessions, sites, or moneys, and the amount in each case since 1904. Presented 20th February, 1911.—*Mr. Worthington*.. .. ..*Not printed.*

130. Return to an order of the House of Commons, dated 23rd January, 1911, for a copy of all correspondence with the Department of the Interior or any officer thereof in regard to half-breed scrips numbers A. 8931 and A. 9970 issued to Joseph William Malbœuf, together with a copy of all documents in any way relating to the said scrips. Presented 20th February, 1911.—*Mr. Martin (Regina)*.. .. ..*Not printed.*

130a. Return to an order of the House of Commons, dated 18th January, 1911, for a copy of all corrspondence, reports, letters, telegrams and other documents, exchanged between the Right Reverend George Holmes, D.D., of Lesser Slave Lake, or anyone on his behalf, and the Minister of the Interior, or any official or temporary employee of the government, in reference to the issue or application of half-breed scrip. Presented 22nd February, 1911.—*Mr. Ames*.. .. ..*Not printed.*

131. Return to an order of the Senate dated 9th February, 1911, for a return showing the importations by the Dominion from the United States in the year 1910 of the following commodities:—

1. Beef and live cattle. 2. Sheep. 3. Poultry. 4. Ham. 5. Pork. 6. Bacon, 7. Flour. 8. Wheat. 9. Barley.

With the value of the different articles.

Showing also the exportations from the Dominion to the United States of the corresponding products with their relative value. Presented 22nd February, 1911.—*Hon. Mr. Macdonald (B.C.)*.. .. ..*Printed for sessional papers.*

131a. Return to an order of the Senate dated 10th February, 1911, for a return showing in as many distinct columns, for the last five years, with an additional column containing the average thereof:—

I. The quality and value of each of the following products.—

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1. Live stock. 2. Pork and bacon. 3. Potatoes. 4. Eggs. 5. Butter. 6. Cheese. 7. Maple sugar. 8. Fruit. 9. Garden products. 10. Hay. 11. Wheat. 12. Flour. 13. Oats. 14. Other natural products. 15. Agricultural implements.

Of Canadian origin exported to:—(*a*) the United States; (*b*) the English market; (*c*) other countries.

II. The quantity and quality of the same articles, together with the amount of duty collected on each of them for consumption and imported from:—(*a*) the United States; (*b*) the British Isles; (*c*) other countries. Presented 14th March, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

132. Return to an order of the House of Commons, dated 23rd January, 1911, for a copy of all correspondence between the Department of the Interior, or any of its officers, and any other persons, respecting the timber on the Fanny Louise Irwin homestead in the District of Chilliwack, British Columbia, including any instructions to solicitors to issue a writ in Exchequer Court for cancellation of timber rights not reserved in Crown grant of the homestead. Presented 20th February, 1911.—*Mr. Taylor* (*New Westminster*).. .. ..*Not printed.*

133. Return to an order of the House of Commons, dated 18th January, 1911, for a return showing the total acreage of school lands sold in the provinces of Alberta and Saskatchewan in each of the years 1906, 1907 and 1908, with the average prices realized, also a statement of sales of such lands in each said province since 1st of January, 1909, to date, giving the places at which each sale was held and date of sale; the description of the land sold; the upset price at which it was offered and the price realized; and the area of land in each township, in which these school lands are located, that was under cultivation at the time it was decided to sell the school lands therein. Presented 20th February, 1911.—*Mr. McCarthy*.. .. ..*Not printed*

134. Return to an order of the House of Commons, dated 15th December, 1909, for a copy of all papers, letters, telegrams, documents, petitions, reports and correspondence with reference to, or in any way concerning the appointment of a government weigher at Montreal. Presented 20th February, 1911.—*Mr. Armstrong*.. .. ..*Not printed.*

135. Supplementary return to an order of the House of Commons, dated 28th February, 1910, for a return showing the number of persons in the employ of each department of the government during the year 1909 under the following heads: (*a*) civil service employees at Ottawa; (*b*) civil service employees outside of Ottawa; (*c*) in stated and regular employ, but not under the Civil Service Act, giving the distinctive service of each group; (*d*) those in temporary or casual employment, giving the distinctive work of each group, and also showing the total amount paid under each head. Presented 20th February, 1911.—*Hon. Mr. Foster*.. .. ..*Not printed.*

136. Return to an order of the House of Commons, dated 30th January, 1911, for a return showing the total quantity of coal delivered to ship at Pictou, in each year during which the SS. *Stanley* has been engaged in the winter service between Prince Edward Island and Nova Scotia, and the cost thereof.

Also, statements showing the total cost of putting coal aboard; the quantity of freight handled at Pictou, and the total cost of handling such freight. Presented 21st February, 1911. *Mr. Stanfield*.. .. ..*Not printed.*

136*a*. Return to an order of the House of Commons, dated 30th January, 1911, for a return showing the total quantity of coal delivered to ship at Pictou, in each year during which the SS. *Earl Grey* has been engaged in the winter service between Prince Edward Island and Nova Scotia, and the cost thereof.

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Also, statements showing the total cost of putting coal aboard; the quantity of freight handled at Pictou, and the total cost of handling such freight. Presented 21st February, 1911.—*Mr. Stanfield*.. .. ..*Not printed.*

136*b*. Return to an order of the House of Commons, dated 30th January, 1911, for a return showing the total quantity of coal delivered to ship at Pictou, in each year during which the SS. *Stanley* has been engaged in the winter service between Prince Edward Island and Nova Scotia, and the cost thereof.

Also, statments showing the total cost of putting coal aboard; the quantity of freight handled at Pictou, and the total cost of handling such freight. Presented 21st February, 1911.—*Mr. Stanfield*.. .. ..*Not printed.*

137. Return to an order of the House of Commons, dated 6th February, 1911, for a copy of the last advertisement for tenders, and the specification and contract or proposed contract for the erection of the Quebec bridge. Presented 21st February, 1911.—*Mr. Lennox*.. .. ..

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or their officers, in connection with the Quebec bridge. Presented 20th April, 1911.—*Mr. Ames*.. .. ..*Not printed.*

137*d*. Return to an order of the Senate dated 24th November, 1910, calling for a copy of all correspondence between the government, some of its members or employees, and the engineers oppointed to prepare the plans of the new bridge to replace the one which collapsed at Quebec in the year 1907. Presented 20th April, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

138. Report of the Ottawa Improvement Commission for the fiscal year ending 31st March, 1910, &c. Presented 21st February, 1911, by Hon. W. S. Fielding. .. .. ..*Not printed.*

139. Fourth Joint Report of the Commissioners for the demarcation of the meridian of the 141st degree of west longitude (Alaskan boundary) appointed in virtue of the first article of the convention between Great Britain and the United States, signed at Washington on the 21st April, 1906. Presented 21st February, 1911, by Rt. Hon. Sir Wilfrid Laurier.. .. ..*Printed for sessional papers.*

140. A return to an address of the Senate dated 20th January, 1911, calling for copies of all orders in council and ordinances, and of all correspondence exchanged between the parties interested in the subject:—

1. Of the lease, before 1896, to Mr. Georges Tanguay of a military property belonging to the government and situated on des Ramparts street at Quebec.

2. Of the requests made by other persons at that time, to purchase or lease the property in question.

3. Of the sale of the same property to the same Georges Tanguay, agreed to by the present government about 1897. Presented 21st February, 1911.—*Hon. Mr. Landry.* *Not printed.*

141. Return to an order of the House of Commons, dated 7th December, 1910, for a statement showing the disposition made by the government during the past year of the following:—public lands, timber limits, mineral areas, water-powers and fishing rights. Presented 22nd February, 1911.—*Mr. Sharpe (Lisgar)*.. .. .. ..*Not printed.*

141*a*. Supplementary return to an order of the House of Commons, dated 7th December, 1910, for a statement shewing the disposition made by the government during the past year of the following:—public lands, timber limits, mineral areas, water-powers and fishing rights. Presented 19th May, 1911.—*Mr. Sharpe (Lisgar)*..*Not printed.*

142. Return to an order of the House of Commons, dated 11th January, 1911, for a return showing the concessions granted to Canada by British countries, the products of which may be imposed into Canada under the preferential tariff. Presented 23rd February, 1911.—*Mr. Ames*.. .. ..*Not printed.*

143. Order in council, correspondence, &c., in respect to a resolution of the Legislative Assembly of the province of Saskatchewan, declaring it desirable that the parliament of Canada should create out of the public domain within the province, a suitable land grant for the University of Saskatchewan. Presented 23rd February, 1911, by Rt. Hon. Sir Wilfrid Laurier.. .. ..*Not printed.*

144. Return to an order of the House of Commons, dated 23rd January, 1911, for a return showing:—1. All grants, leases, licenses, and concessions given to individuals or corporations of water power rights or privileges on the Winnipeg river at present in force. 2. The names and descriptions of such power sites. 3. The terms and conditions upon which they are respectivoly held. 4. The dates upon which these powers

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or privileges were respectively given. 5. What constitutes forfeiture. 6. What grants, leases or licenses have been forfeited. 7. The general rules and regulations, if any, applying to the giving and holding of the water-powers on this river. 8. The amount of development effected by the grantees or lessees respectively. 9. What title or interest the Dominion claims in the running water, the bed of the river, and the banks thereof. Presented 24th February, 1911.—*Mr Haggart (Winnipeg).*

Not printed.

145. Return to an order of the House of Commons, dated 5th December, 1910, for a return showing the total number of accidents on railways in Canada since 1st April. 1909, and up to date; the number of fatal accidents; the number on each railway, and the causes of the same. Also, the number of accidents on construction work, fatal or otherwise, on the Canadian Northern and the Grand Trunk Pacific railways, and the causes of the same. Presented 24th February, 1911.—*Mr. Smith (Nanaimo).*

Not printed.

146. Return to an order of the Senate dated 24th January, 1911, showing, year by year, from 1st July, 1896, up to date, the amounts paid to Mr. J. B. Laliberté, of Quebec, merchant, by each of the departments of the government of this country. Presented 24th February, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

147. Return to an order of the Senate dated 25th January, 1911, for the production of a statement showing, year by year, from the 1st July, 1896, up to this date, the sums of money paid to the newspaper, the *Daily Telegraph*, of Quebec, by each of the different departments of the government of this country. Presented 24th February, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

148. Return to an order of the Senate dated 26th January, 1911, for a return showing, year by year, since 1st July, 1896, up to date, the amounts paid to Mr. Louis Letourneau, of Quebec, or to the Quebec Preserving Company, by each of the departments of the government of this country. Presented 24th February, 1911.—*Hon. Mr. Landry.*

Not printed.

149. Return to an order of the Senate dated 27th January, 1911, for the production of a return showing, year by year, from the 1st of July. 1896, to this date, the sums of money paid to Messrs. Samson and Filion, of Quebec, merchants, by each of the different departments of the government of this country. Presented 24th February, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

150. Return to an order of the Senate dated 27th January, 1911, for the production of a return showing, year by year, from the 1st July, 1896, to this date, the sums of money paid to Mr. C. E. Taschereau, of Quebec, notary, by each of the different departments of the government of this country. Presented 24th February, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

151. Return to an order of the Senate dated 27th January, 1911, for the production of a return showing, year by year, from the 1st July, 1896, to this date, the sums of money paid to Mr. George Tanguay, of Quebec, by each of the different departments of the government of this country. Presented 24th February, 1911.—*Hon. Mr. dry*.. .. ..*Not printed.*

152. Return to an order of the House of Commons, dated 6th February, 1911, for a copy of the curator's reports in the cases of all banks for which curators have been appointed. Presented 27th February, 1911.—*Hon. Mr. Foster*.. .. ..*Not printed*

CONTENTS OF VOLUME 24—*Continued.*

152*a*. Supplementary return to an order of the House of Commons, dated 6th February, 1911, for a copy of the curators' reports in the cases of all banks for which curators have been appointed. Presented 2nd May, 1911.—*Hon. Mr. Foster*.. .. .. ..*Not printed.*

153. Return to an order of the House of Commons, dated 23rd January, 1911, for a copy of the by-laws, rules and regulations of the Canadian Bankers' Association as approved by the Treasury Board and now in effect. Presented 27th February, 1911.—*Hon. Mr. Foster*.. .. ..*Printed for sessional papers.*

154. Return to an order of the House of Commons, dated 30th January, 1911, for a return showing the total amount of money that has been expended on the Seybold building for alterations and repairs, or in installation of elevators, heating apparatus or other fixtures, by the government during the term of the present lease, and also under the former lease, when used for census purposes.

2. The particulars of expenditures and to whom were the several amounts paid. Presented 6th March, 1911.—*Mr. Goodeve*.. .. ..*Not printed.*

155. Return to an order of the House of Commons, dated 20th February, 1911, for a copy of all applications made by employees of the North Atlantic collieries for a conciliation board within the past six months, and of all letters, telegrams, documents, statements and other papers and documents touching the same, or having any relation thereto, including all correspondence received by the government or any department of the government from the said North Atlantic collieries or from the employees thereof touching the matter aforesaid. Presented 27th February, 1911.—*Mr. Maddin.* *Not printed.*

156. Return to an order of the House of Commons, dated 2nd February, 1911, for a return showing the amount of money paid for provisions, supplies, repairs, work or any other service for the year ending 31st March, 1910, to the following firms in the city of Kingston, respectively: Eliott Brothers, McKelvey & Birch, C. Livingstone & Bros., R. Crawford, James Redden & Co., R. Carson, and James Crawford. Presented 27th February, 1911.—*Mr. Edwards*.. .. ..*Not printed.*

157. Orders in council, correspondence, &c., touching any proposal or Bill to erect dams, or other similar works across the River St. Lawrence, or part of the said river, at or near the Long Sault, or in the vicinity thereof. Presented 27th February, 1911, by Rt. Hon. Sir Wilfrid Laurier.. .. ..*Printed for sessional papers.*

157*a*. Partial return to an address of the House of Commons, dated 8th February, 1911, for a copy of all correspondence, memoranda, reports, memorials, plans, orders in council, treaties, conventions, agreements, documents and papers of every kind, touching any proposal or Bill to erect dams or other similar works across the River St. Lawrence, or part of the said river, at or near the Long Sault, or in the vicinity thereof; including all statutes of the state of New York and the United States of America relating thereto, and all Bills now before the Congress of the United States of America touching the same, and all the proceedings upon all such Statutes and Bills. Presented 9th March, 1911.—*Mr. Borden*.. .. ..*Not printed.*

158. Return to an order of the House of Commons, dated 6th February, 1911, for a return giving the names of all persons receiving fishery bounties, and the amount received by each, at each of the following ports:—Bauline, Little Lorraine, Main-á-Dieu and Scaterie, in the county of Cape Breton, Nova Scotia. Presented 28th February, 1911. —*Mr. Maddin*.. .. ..*Not printed.*

CONTENTS OF VOLUME 24—*Continued.*

158a. Return to an order of the House of Commons, dated 16th April, 1911, for a return showing the names of all persons in the province of New Brunswick who have received fishing bounties during the year ending 31st March, 1911, with the amount received by each. Presented 2nd May, 1911.—*Mr. Daniel*.. .. ..*Not printed.*

159. Return to an order of the House of Commons, dated 20th January, 1911, for a copy of all reports, correspondence, and documents, not already brought down, including report of survey made in 1909 of the harbour of Cape John and Tatamagouche Bay, in the counties of Pictou and Colchester, in the province of Nova Scotia, relating to the route of the winter steamers between Prince Edward Island and the mainland of Canada, and suggesting or recommending a change or changes on such route, and an increase in the number of trips daily of such winter steamers; also a copy of all similar papers, not already brought down, relating to the route of the summer mail steamers between Charlottetown and the mainland of Canada, and suggesting a change in that route and an increase in the number of trips daily; and also with regard to connecting such suggested route with a point on the Intercolonial railway. Also for a copy of all similar papers, if any, relating to or suggesting the route between Cape Traverse in Prince Edward Island and Cape Tormentine in the mainland, as a route for the winter and summer steamers. Also for a copy of all reports, papers and correspondence relating to additional or improved aids to navigation of the harbour of Charlottetown and entrance thereto and in Tatamagouche bay and harbour. Presented 6th March, 1911.—*Mr. Warburton*.. .. .. ..*Not printed.*

160. Return to an address of the House of Commons, dated 20th February, 1911, for a copy of all correspondence, recommendations, orders in council, or other documents relating to the case of R. E. Curran, a railway mail clerk, who was fatally injured in an accident at Owen Sound, on the 29th May, 1908, and with regard to which application was made for a compassionate grant or allowance to his heirs or family. Presented 7th March, 1911.—*Mr. Macdonell*.. .. ..*Not printed.*

161. Return to an address of the House of Commons, dated 27th February, 1911, for a copy of all orders in council, reports, correspondence, documents and papers touching the dismissal of the sub-collector of customs at Mahone bay, Nova Scotia. Presented 13th March, 1911.—*Mr. Taylor (Leeds)*.. .. ..*Not printed.*

162. Return to an order of the House of Commons, dated 20th February, 1911, for a return showing:—1. The nature of the subsidy which has been granted to the Vancouver Dry Dock Company.

2. The nature of payment of interest or of a guarantee of such subsidy. Presented 13th March, 1911.—*Mr. Barnard*.. .. ..*Not printed.*

163. Return to an order of the House of Commons, dated 6th March, 1911, for a copy of all papers, reports of appraiser, letters and correspondence relating to the appraising and passing the customs of the vessel *Wanda*, owned by one William R. Travers, Toronto, on the 20th October, 1909. Presented 14th March, 1911.—*Mr. Sharpe (Ontario)*.. .. ..*Not printed.*

164. Statement of the affairs of the British Canadian Loan and Investment Company (Limited) for the year ended 31st December, 1910.

Also, a list of the shareholders on 31st December, 1910, in accordance with chapter 57 of 39 Victoria. Presented (Senate) 14th March, 1911, by the Hon. the Speaker.

Not printed.

CONTENTS OF VOLUME 24—*Continued.*

165. Return to an order of the House of Commons, dated 27th February, 1911, for a return showing:—

1. How many fisheries officers have been appointed in connection with the Ontario fisheries service within the last year?

2. What are their names, their rank, and the limits territorially of the jurisdiction of each?

3. What is the salary of each, and what is the length of time or duration of such appointments?

4. Do the duties of these officers in any, and in what cases duplicate the services if similar officers appointed by the Ontario legislature?

5. Has anything been done, and what, to prevent the duplication of this service?

6. What is the total revenue derived during the years 1909 and 1910 from fisheries for the province of Ontario, and what was the total expenditure?

7. What will be the total expenditure for the year 1911?

8. Is any, and what, system followed in making appointments to this service as to efficiency. Presented 17th March, 1911.—*Mr. Porter*.. .. ..*Not printed.*

165*a*. Return to an order of the House of Commons, dated 16th February, 1911, for a return showing how many wardens for the protection of fisheries were appointed in Victoria county, N.S., between July and December in the years 1906, 1907, 1909 and 1910.

2. Their names, length of service and amount paid to each. Presented 24th March, 1911.—*Mr. Maddin*.. .. ..*Not printed.*

166. Return to an order of the House of Commons, dated 23rd January, 1911, for a copy of all correspondence between the Post Office Department and any of the officials or other persons, relative to making an allowance for the transportation of letter carriers on the tramway system in New Westminster. Presented 17th March, 1911.—*Mr. Taylor (New Westminster)*.. .. ..*Not printed.*

167. Return to an address of the Senate dated 23rd February, 1911, for a copy of all the documents relating to the case of cholera reported in November last as to the Russian Said Godlieb, to the quarantining of this person, and to his detention until this date on Grosse Isle, with a history of the case. day by day, up to this date. Presented 16th March, 1911.—*Hon. Mr. Landry*.. .. .. *Not printed.*

168. Return to an address of the Senate dated 17th January, 1911, for a statement of the number of divorces granted by the parliament of Canada since 1894 to 1910 inclusive, together with the number of divorces granted by each of the courts of Nova Scotia, New Brunswick, Prince Edward Island, and British Columbia; also the population of each of those provinces according to census of 1901; and the aggregate population of Ontario, Quebec, Manitoba, and the Northwest Territories according to census in 1901. Presented 16th March, 1911.—*Hon. Mr. Power*.. .. ..*Not printed.*

169. Return to an order of the Senate dated 17th February, 1911, for a return showing the correspondence exchanged, the report made by the captain and the log kept by him relating to the trip just made by the steamer *Montcalm* in the lower St. Lawrence, the island of Anticosti and to the Baie des Sept Isles, &c. Presented 16th March, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed*

170. Return to an address of the Senate dated 10th March, 1911, calling for a statement showing:—

1. Who are among the judges of the Superior Court of the province of Quebec, those whose place of residence is fixed by the commission appointing them, and what is, for each of these judges, the place so fixed.

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2. Who are the judges whose place of residence has been fixed or changed by order in council, and what is for each of these judges, the place of residence now fixed.

3. Who are the judges whose place of residence has never been fixed, neither in the commission nor by any subsequent order in council, and what is the judiciary district to which they were appointed. Presented 21st March, 1911.—*Hon. Mr. Landry*.. .. .. .

CONTENTS OF VOLUME 24—*Continued.*

176. Papers referring to the organization of a Secretariat, as follows:—1. Despatch to the governors of the self-governing colonies relative to the reorganization of the Colonial Office.

2. Note on a visit to Australia, New Zealand and Fiji in 1909, by Sir Charles Lucas, K.C.M.G., C.B., assistant under secretary of state for the Colonies.

3. Report of the Dominions Department of the Colonial Office for the year 1909-1910.

4. Imperial Copyright Conference, 1910, memorandum of the proceedings.

5. Further correspondence relating to the Imperial Conference.

6. Correspondence relating to th Imprial Confrence, 1911. Presented, 28th March, 1911, by Rt. Hon. Sir Wilfrid Laurier.. .. ..*Not printed.*

177. Return to an order of the House of Commons, dated 20th February, 1911, for a copy of the application by or on behalf of the Glace Bay Bait Association, Glace Bay, N.S., for moneys in connection with the cold storage building for the storage of bait, at Glace Bay, N.S.; also a copy of all correspondence between the said association or anyone on its behalf and the government, any department of the government, or anyone on behalf of the government or any of its departments. Presented 28th March, 1911.—*Mr. Maddin*.. .. ..*Not printed.*

177*a*. Return to on order of the House of Commons, dated 3rd April, 1911, for a copy of all the correspondence in connection with the building of bait freezers at Louisburg and Lingan in the riding of South Cape Breton. Presented 20th April, 1911.—*Mr. Maekenzie*.. .. ..*Not printed.*

178. Return to an address of the Senate dated 8th March, 1911, that an order of the Senate do issue for the production of a copy of the complaint made by the commandant of the 61st Regiment against the commandant of the 7th Military District, of the reply of the latter and of all correspondence on the subject between the authorities at Ottawa and those at Quebec and Montreal, together with a copy of the report of the Inspector General respecting the case. Presented 28th March, 1911.—*Hon. Mr. Landry*.. .. ..*Not printed.*

179. Return to an order of the House of Commons, dated 16th March, 1911, for a return showing the average prices of butter and of eggs in London, England, for the past five years in comparison with the prices, respectively, in eastern provinces, in Montreal, in Toronto, in Minneapolis, in Chicago, in Detroit, in Buffalo, in Boston and in New York. Presented 30th March, 1911.—*Mr. Sharpe (Ontario)*.. .. ..*Not printed.*

179*a*. Return to an order of the House of Commons, dated 23rd March, 1911, for a return showing the quantity and value of butter, eggs, poultry, chilled or frozen meat, bacon, lard, apples, vegetables, wheat, barley, cattle, horses and potatoes imported into Canada during the six months ending 1st March, 1911, the countries from which the same were imported and the duty collected thereon. Presented 6th April, 1911.—*Mr. Middlebro*.. .. ..*Not printed.*

179*b*. Supplementary return to an order of the House of Commons, dated 23rd March, 1911, for a return showing the quantity and value of butter, eggs, poultry, chilled or frozen meat, bacon, lard, apples, vegetables, wheat, barley, cattle, horses and potatoes imported into Canada during the six months ending 1st March, 1911, the countries from which the same were imported and the duty collected thereon. Presented 8th May, 1911.—*Mr. Middlebro*.. .. ..*Not printed.*

180. Return to an order of the House of Commons, dated 14th December, 1910, for a return showing the total payments made by the government to the Eclipse Manufacturing

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Company, Limited, for year 1909-10, and how these contracts were let; the total payments made by the government to the Office Specialty Manufacturing Company, Limited, for year 1909-10, and how these contracts were let; the total payments made by the government to Messrs. Ahearn & Soper for year 1909-10, and how these contracts were let. Presented 3rd April, 1911.—*Mr. Sharpe (Lisgar)*.. .. ..*Not printed.*

181. Return to an order of the Senate dated 22nd February, 1911, for a copy of all orders in council and of all orders issued by the Minister of the Interior giving, from time to time, to the commissioner for the Northwest Territories, since his appointment as such, the instructions which he is to follow in the exercise of his executive in so far as concerns the government of the Northwest Territories. Presented 4th April, 1911. *Hon. Mr. Landry*.. .. ..*Not printed.*

182. Return to an order of the Senate dated 16th March, 1911, calling for a copy of all correspondence relating to the stranding in August, 1910, of the ship *Manchester Engineer* near the Strait of Belle Isle, and of the investigation held with reference thereto at Quebec during the month of September or October last. Presented 4th April, 1911. —*Hon. Mr. Landry*.. .. ..*Not printed.*

183. Return to an order of the House of Commons, dated 15th February, 1911, for a return showing all communications, telegrams, letters, petitions or plans relating to the rifle range at Bear River, N.S., received since January, 1909.

2. From whom received and upon what dates respectively? Presented 5th April, 1911. —*Mr. Jameson*.. .. ..*Not printed.*

184. Return to an order of the House of Commons, dated 14th December, 1910, for a return showing what total amount has been annually expended in each province since 1880 by the Department of Public Works for harbours and rivers, together with the annual totals of said expenditure for the whole of Canada; also that the Department of Public Works prepare and lay upon the Table of this House with this Return a map for each province, showing the location of all wharves, piers, breakwaters, &c., constructed or purchased by the federal government, and presently owned by the Dominion of Canada. Presented 6th April, 1911.—*Mr. Ames*.. .. ..*Not printed.*

185. Return to an order of the Senate dated 22nd February, 1911, for:—

1. Copies of all papers relating to the appointment of Martin Dickie to the command of the 76th Regiment of the counties of Colchester and Hants.

2. Copies of all papers relating to the recommendation of Major J. L. Barnhill by Lieut. General Drury and others to the command of the said regiment.

3. Copies of all documents relating in any way to the reasons or causes why the said Major Barnhill as the senior officer of said regiment should not have been appointed to the command of the same.

4. Copies of all correspondence and other popers and documents relating to the recent reorganization of the 78th Colchester, Hants and Pictou Regiment of "Highlanders." Presented 4th April, 1911.—*Hon. Mr. Lougheed*.. .. ..*Not printed.*

186. Return to an order of the House of Commons, dated 27th March, 1911, for a return showing the mileage of railways owned, controlled or operated in the United States by the Grand Trunk, the Canadian Pacific and other Canadian railway companies.

2. Also the mileage of railways owned, controlled or operated by the United States railway corporations in Canada. Presented 10th April, 1911.—*Mr. Rutan.*

Not printed.

187. Return to an order of the House of Commons, dated 3rd April, 1911, for a copy of all correspondence, declarations, telegrams, mailing lists, and other documents relating

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to an application asking for the granting of statutory postal privileges to a newspaper published at New Glasgow, Nova Scotia, called the Guysborough *Times*. Presented 10th April, 1911.—*Mr. Sinclair*.. .. ..*Not printed.*

188. Return to an order of the House of Commons, dated 23rd January, 1911, for a copy of all memorials, reports, correspondence and documents in the possession of the government, not already brought down, relating to a survey of a route for a tunnel under the Straits of Northumberland between the province of Prince Edward Island and the mainland of Canada, and also relating to the construction of such tunnel. Presented 12th April, 1911.—*Mr. Richards*.. .. ..*Not printed.*

189. Return to an order of the House of Commons, dated 27th February, 1911, for a copy of all enactments, regulations, documents, papers and information of every kind setting forth or showing the systems or method by which the census is taken in the United Kingdom, the British Dominions and foreign countries, respectively; and showing in what respect, if any, the principle, system or method adopted in the United Kingdom, the British Dominions, and foreign countries differs from that proposed for the approaching census in Canada. Presented 12th April, 1911.—*Mr. Borden*.. .. ..*Not printed.*

189*a*. Forms of schedules, &c., in connection with the census to be taken during the year 1911. Presented 21st April, 1911, by Hon. S. A. Fisher.. .. ..*Not printed.*

189*b*. Supplementary return to an order of the House of Commons, dated 27th February, 1911, for a copy of all enactments, regulations, documents, papers and information of every kind setting forth or showing the systems or method by which the census is taken in the United Kingdom, the British Dominions and foreign countries, respectively; and showing in what respect, if any, the principle, system or method adopted in the United Kingdom, the British Dominions, and foreign countries differs from that proposed for the approaching census in Canada. Presented 10th May, 1911.—*Mr. Borden*.. .. ..*Not printed.*

190. Return to an order of the House of Commons, dated 6th February, 1911, for a return shewing:—1. How many employees were connected with the Printing Bureau in 1896?

2. The names of those employees connected with the Printing Bureau who were dismissed between 1896 and 1911, and the date of dismissal and the cause in each case?

3. The names of those employees, who resigned or died between the years 1896 and 1911, and the date of resignation or death in each case.

4. The names of those who have been appointed to positions in connection with the Printing Bureau between 1896 and 1911, and the date of appointment in each case. Presented 12th April, 1911.—*Mr. Edwards*.. .. ..*Not printed.*

191. Return to an address of the Senate dated 17th January, 1911, for the production of a copy of the agreements concluded between the government and the former proprietor of the Stadacona farm at St. Félix du Cap Rouge, with reference to the purchase of the said farm, and of operating the same in the future as an experimental farm, and of all correspondence on these two matters. Presented 19th April, 1911.—*Hon. Mr. Landry* .. .. *Not printed.*

192. Return to an order of the House of Commons, dated 27th March, 1911, for a copy of all the correspondence, contracts, assignments and other documents with regard to what is called the Percy Aylwin irrigation grant, granted to him under order in council dated 1st September, 1908. Presented 8th May, 1911.—*Mr. Campbell*..*Not printed.*

CONTENTS OF VOLUME 24—*Continued.*

193. Return to an order of the House of Commons, dated 27th February, 1911, for a copy of all letters, papers, telegrams, documents, vouchers and pay sheets, showing the names of all persons who supplied materials or worked, and the prices and rates of wages, and sums paid to each, in connection with the construction of a wharf at Deep Brook, N.S. Presented 28th April, 1911.—*Mr. Jamesqn*.. .. .. ..*Not printed.*

194. Return to an address of the House of Commons, dated 10th April, 1911, for a copy of all papers, documents, memoranda and correspondence relating to the parliament site in the city of Winnipeg for the province of Manitoba, including the reservations made in the Crown grants to the Hudson's Bay Company, and the purpose for which the same were made, and also a copy of the Dominion order in council, dated the 23rd January, 1872, and all subsequent orders in council and correspondence dealing with the site for both provincial and Dominion purposes. Presented 1st May, 1911. —*Mr. Haggart (Winnipeg)*.. .. ..*Not printed.*

194*a*. Supplementary return to an address of the House of Commons, dated 10th April, 1911, for a copy of all papers, documents, memoranda and correspondence relating to the parliament site in the city of Winnipeg for the province of Manitoba, including the reservations made in the Crown grants to the Hudson's Bay Company, and the purpose for which the same were made, and also a copy of the Dominion order in council, dated the 23rd January, 1872, and all subsequent orders in council and correspondence dealing with the site for both provincial and Dominion purposes. Presented 20th July, 1911.—*Mr. Haggart (Winnipeg)*.. .. ..*Not printed.*

195. Return to an address of the House of Commons, dated 23rd January, 1911, for a copy of all orders in council, regulations and rules of the several departments of the government respecting the participation by employees of the government in civic or municipal affairs, and especially with regard to their disability from serving in civic or municipal councils; and all correspondence, documents and papers since the first day of January, 1900, touching the operation of the said orders in council, rules and regulations. Also a list of all employees of the government who have been elected to or have served in city or municipal councils during the said period from the first day of January, 1900, up to the present time, including all those now so serving and those who have been prevented by the government from serving. Presented 1st May, 1911.—*Mr. Borden*.. .. ..*Not printed.*

195*a*. Supplementary return to an address of the House of Commons, dated 23rd January, 1911, for a copy of all orders in council, regulations and rules of the several departments of the government respecting the participation by employees of the government in civic or municipal affairs, and especially with regard to their disability from serving in civic or municipal councils; and all correspondence, documents and papers since the first day of January, 1900, touching the operation of the said orders in council, rules and regulations. Also a list of all employees of the government who have been elected to or have served in city or municipal councils during the said period from the first day of January, 1900, up to the present time, including all those now so serving and those who have been prevented by the government from serving. Presented 3rd May, 1911.—*Mr. Borden*.. .. ..*Not printed*

196. Return to an address to His Excellency the Governor General of the 3rd April, 1911 for a copy of all orders in council, memoranda, papers and documents, relating to the transfer, or any negotiations concerning the transfer, of a charter known as the Manitoba and South Eastern Railway Company. Presented 2nd May, 1911.—*Mr McCarthy*.. .. ..*Not printed*

CONTENTS OF VOLUME 24—*Continued.*

197. General rule and order of the Exchequer Court of Canada in regard to seal-. Presented 2nd May, 1911, by Hon. Charles Murphy.. .. ..*Not printed.*

198. Return to an order of the House of Commons, dated 18th January, 1911, for a return showing how many aliens there are in the service of the government of Canada who are residing out of Canada, their names, nationality, the nature of the service, term of service, residence, and salary.

2. The same information as to aliens now residing in Canada who have been in the service of the government of Canada for a period of three years or more, and the date and length of service.

3. The same information in regard to aliens in the service of the government of any province or provinces of Canada. Presented 9th May, 1911.—*Mr. Lennox.*
Not printed.

199. Return to an order of the House of Commons, dated 1st May, 1911, for a return giving the names of the gentlemen appointed as judges by the present government of Canada since they came into power in 1896, the residences of these gentlemen at the time of appointments, the positions to which they were respectively appointed, and in each case where the appointee had a predecessor in the position, the time which the position was vacant. Presented 11th May, 1911.—*Mr. Lennox*.. . .. .*Not printed.*

200. Return to an order of the House of Commons, dated 16th January, 1911, for a copy of all correspondence, telegrams, reports, contracts, papers and memorials in the possession of the government relating to the establishment of a fast Atlantic service between Canada and any other country; also with reference to an all red route, cable, or telegraph service, between Canada and any other country, within the past fifteen years. Presented 16th May, 1911. *Mr. Armstrong*.. .. ..*Not printed*

201. Return to an order of the House of Commons, dated 18th May, 1911, for copies of any correspondence between the government of New Brunswick, or any member or members thereof, and the government of Canada, or any member thereof, with reference to changing the Subsidy Act, 1910, with respect to a subsidy for a line of railway from Grand Falls in the province of New Brunswick to the city of St. John in the same province. Presented 19th May, 1911.—*Mr. Carvell*.. .. ..*Not printed.*

202. Copy of report of Board of Conciliation and Investigation in the matter of the Western Coal Operators' Association and its employees. Presented 19th July, 1911, by Hon. W. L. Mackenzie King.. .. ..*Not printed.*

203. Return to an order of the House of Commons, dated 23rd January, 1911, for a return—

1. Showing in tons the east-bound and the west-bound traffic on the Intercolonial railway for the five years ending 30th June, 1910.

2. The miles of main trunk line and branches of the Intercolonial railway in each province through which it passes, distinguishing the trunk line from the branches.

3. Showing in tons the west-bound traffic originating in each of the maritime provinces during the period of five years ending 30th June, 1910. Presented 18th July, 1911.—*Mr. Sinclair*.. .. ..*Not printed.*

204. Return to an order of the House of Commons, dated 13th March, 1911, for a copy of all correspondence, telegrams, &c., during the past twelve months between Mr. E. J. Walsh, C.E., and the Minister of Department of Railways and Canals in regard to the Newmarket Canal. Presented 18th July, 1911.—*Mr. Wallace* .. .. ..*Not printed*

CONTENTS OF VOLUME 24—*Concluded.*

205. Return to an order of the House of Commons, dated 20th April, 1911, for a return showing:—1. The quantity of bituminous coal imported into Ontario transhipped into other provinces in 1910.

2. The quantity of bituminous coal imported into Ontario in 1910 imported by the different railway companies.

3. The quantity and value of slack coal imported into Ontario in 1910, what portion of this slack coal was transhipped to other provinces, and what imported by railway companies. Presented 18th July, 1911.—*Mr. Macdonell.. .. .. ..Not printed.*

206. Return to an order of the House of Commosn, dated 24th April, 1911, for a return showing in detail the expenses incurred and paid for the Paris exposition in 1900, as payments of the Colonial committee on account of space, &c., $87,000, as shown in the report of the Auditor General for 1899-1900, page D—15. Presented 21st July, 1911.—*Mr. Paquet.. .. ..Not printed*

207. Report of Mr. Justice Murphy, Royal Commissioner appointed to investigate alleged Chinese frauds and opium smuggling on the Pacific coast, 1910-11, together with copies of the evidence taken and exhibits produced before the said commissioner. Presented 21st July, 1911, by Rt. Hon. Sir Wilfrid Laurier.. .. ..*Not printed.*

208. Minutes of Proceedings of the Imperial Conference, 1911. Presented 27th July, 1911, by Rt. Hon. Sir Wilfrid Laurier.

Printed for both distribution and sessional papers.

208*a*. Despatches, &c., relative to the simultaneous publication of memorandum of conference on the subject of the status of Dominion navies. Presented 27th July, 1911, by Rt. Hon. Sir Wilfrid Laurier.

Printed for both distribution and sessional papers.

208*b* and **208***c*. Memorandum of conferences between the British admiralty and representatives of the Dominions of Canada and Australia; and also, copy of a cable despatch from Mr. Harcourt to Lord Grey. Presented 28th July, 1911, by Rt. Hon. Sir Wilfrid Laurier.. .. ..*Printed for both distribution and sessional papers*

208*d*. Report of a Committee of the Imperial Conference convened to discuss defence (military), of the War Office, 14th June and 17th June, 1911. Presented 28th July, 1911, by Hon. S. A. Fisher.. .. ..*Printed for both distribution and sessional papers.*

209. Memorandum respecting the printing of voters' lists. Presented 27th July, 1911, by Rt. Hon. Sir Wilfrid Laurier.. .. ..*Not printed.*

210. Text of Pelagic Sealing Treaty signed at Washington, 7th July, 1911. Presented 27th July, 1911, by Rt. Hon. Sir Wilfrid Laurier.. .. .. ..Printed for sessional papers.

211. Interim report, Alberta and Saskatchewan Fisheries Commission, 1910. Presented 28th July, 1911, by Hon. L. P. Brodeur.. .. ..*Not printed.*

REPORTS, RETURNS AND STATISTICS

OF THE

INLAND REVENUES

OF THE

DOMINION OF CANADA

FOR THE YEAR ENDED MARCH 31

1910

PART II

WEIGHTS AND MEASURES, GAS AND ELECTRICITY

PRINTED BY ORDER OF PARLIAMENT

OTTAWA

PRINTED BY C. H. PARMELEE, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY

1910

REPORT

OF THE

DEPUTY MINISTER OF INLAND REVENUE

ON THE

INSPECTION OF WEIGHTS AND MEASURES, GAS AND ELECTRICITY

To the Honourable
The Minister of Inland Revenue.

SIR,—I have the honour to submit herewith my annual report on the inspection of weights and measures, gas and electricity, with the usual statements in connection therewith, for the Fiscal Year ended March 31, 1910.

1. The total revenue collected during the year for the inspection of weights and measures, was $92,814.05, as against $80,287.05 collected during the twelve months ended March 31, 1909.

2. The total expenditure was $110,281.62 as against $104,255.67 expended during the year ended March 31, 1909.

3 Appendix 'A' gives a summary statement of the receipts and expenditures of each inspection division.

4. In Appendices 'B,' 'C' and 'D' will be found a detailed statement of weights, measures and weighing machines presented for verification, verified and rejected during the year. The number of all descriptions may be summarily stated as follows :

—	Presented.	Verified.	Rejected.	Percentage of Rejections.
Weights, Dominion	71,185	70,882	303	·425
Measures of capacity, Dominion	112,083	112,008	75	·067
Lineal measures	8,922	8,849	73	·818
Balances, equal arms	14,902	14,675	227	1·523
" steelyards	4,545	4,438	107	2·354
" platform scales	45,820	44,694	1,126	2·457
Miscellaneous weights	688	687	1	·145
" measures of capacity	11,853	11,834	19	·160
" balances	45,813	45,697	116	·253

Inspection of Gas.

5. The total revenue collected during the twelve months ended March 31, 1910, for the inspection of gas and gas meters, was $54,331.20, as compared with $48,604.21, collected during the year ended March 31, 1909.

6. The total expenses were $36,633.55 as against $35,515.36 expended during the year ended March 31, 1909.

7. Appendix "E" gives a summary statement of the receipts and expenditures of each gas inspection district.

8. A statement of the illuminating power and purity of gas inspected during the year will be found in Appendix "F."

9. The illuminating power, where inspection has been made, has been as follows :—

Places.	Number of tests made.	Number of times below Standard.	Places.	Number of tests made.	Number of times below Standard.
Barrie	12	1	St. Catharines	12	
Belleville	22	1	St. Thomas	12	
Berlin	12		Toronto	104	
Brockville	28		Windsor	11	5
Cobourg	12		Woodstock	12	
Cornwall	3		Montreal	104	
Deseronto	12		Quebec	12	
Guelph	12		Sherbrooke	12	
Hamilton	26		St. Hyacinthe	12	
Ingersoll	12	3	Fredericton	8	
Kingston	26		Moncton	12	
Listowel	12		St John, N.B	24	
London	105	4	Halifax	12	
Napanee	13		Yarmouth	12	
Ottawa	104		Charlottetown	15	
Owen Sound	12		Winnipeg	104	32
Peterborough	24		Nanaimo	12	
Port Hope	12		New Westminster	12	
Sarnia	9		Vancouver	92	56
Stratford	12		Victoria	11	

The revenue derived from the inspection of electricity was as follows :—

Fees for inspection of meters, &c		$ 46,316 00
The expenses of inspection (annual)	$ 15,210 19	
Expended on standard instruments, and maintenance of equipment	3,670 40	
		18,880 59
Leaving a net revenue of		$ 27,435 41

Since the year 1896-97 the two services of gas and electricity inspection, which are conducted largely by the same staff of officers, have reached that point at which they have ceased to be a burden upon the general taxpayer, as shown below: —

Years.	Gas and Electricity.	
	Revenue.	Expenditure.
	$ cts	$ cts.
*1899-1900	35,523 50	26,424 48
*1900-01	37,536 57	28,247 20
1901-02	43,663 05	33,328 48
1902-03	49,054 55	36,006 47
1903-04	50,218 75	33,426 15
1904-05	62,561 37	34,774 02
1905-06	76,539 00	38,917 48
1906-07 (nine months)	57,868 18	30,793 84
1907-08	86,552 20	48,831 75
1908-09	92,450 21	54,018 71
1909-10	100,647 20	55,514 14

* Exclusive of cost of standard instruments.

On July 1, 1909, there was brought into effect new schedules of fees for the inspection of meters, for gas and electricity, which it was expected would tend to decrease the revenue from these sources. Notwithstanding these reductions the excess of revenue over expenditure has increased. This has been due, to a great extent, to the increase in the use of electrical energy for light, heat and power purposes.

In the near future it may be advisable to further reduce the charges made in connection with the sources of revenue from both these services.

The kindred service of weights and measures inspection, it will be observed, earns about 84 per cent of its actual cost, the expenditure as already stated having been $110,281.62 against a revenue of $92,814.05.

As stated in my last report, the department has, in the last few years, sent out, for use in educational institutions, over seven hundred sample sets of metric weights and measures. The supply is now exhausted and no additional sets have yet been ordered.

I have the honour to be, sir,

Your obedient servant,

W. J. GERALD,
Deputy Minister.

Inland Revenue Department,
Ottawa, June 9, 1910.

APPENDIX A

STATEMENT of Weights and Measures Expenditures and Revenues for the Fiscal Year ended March 31, 1910.

Inspection Divisions.	Inspectors and Assistants.	Expenditures.							Revenues.
		Salaries.	Special Assistance.	Seizures.	Rent.	Travelling Expenses.	Sundries.	Total.	
		$ cts.	$ cts.	$ c.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Belleville...	Johnson, Wm..... Slattery, Thos .... Kylie, R..... Howson, G. H ... Gallagher, Thos... Johnston, C. W...	3,579 77	.....	....	416 25	1,097 02	421 96	5,515 00	3,085 95
Hamilton...	Freed, A. T..... Sealey, J. C.... Laidman, R. H.... Wheatley, A. E... Fitzgerald, E. W.. Marentette, A .... Robins, S. W..... Clegg, Jos	6,480 79	.....	....	.....	1,739 03	116 09	8,335 91	10,277 66
Kingston...	Gallagher, Thos... Johnston, C. W...	1,670 11	141 93	....	.....	860 56	83 24	2,755 84	4,432 85
Ottawa....	Macdonald, J. A.. Winsor, John..... Breen, John . .. Findlay, R..... Hodgins, H. A ... Church, C. E.	4,649 88	450 00	....	.....	872 34	161 67	6,133 89	3,277 34
Toronto....	McConvey, J. J .. Milligan, R. J.... Murdock, Jas..... Smith, J. C..... Wright, R. J.... . Cruikshank, J. L.. Lyons, A.....	6,499 92	.....	30	.....	2,134 84	168 01	8,803 07	11,584 45
Windsor....	Hayward, W. J... Butler, F. H..... Coughlin, D..... Hughes, R. A .... Thomas, J. S. .... Liddle, David.....	5,749 96	.....	....	.....	1,842 27	270 76	7,862 99	9,529 00
	Ontario.....	28,630 43	591 93	30	416 25	8,546 06	1,221 73	39,406 70	42,187 25

APPENDIX A

STATEMENT of Weights and Measures Expenditures and Revenues for the Fiscal Year ended March 31, 1910.

Inspection Divisions.	Inspectors and Assistants.	Expenditures. Salaries.	Special Assistance.	Seizures.	Rent.	Travelling Expenses.	Sundries.	Total.	Revenues.
		$ cts.	$ cts.	$ c.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Montreal. .	Archambault, J.E. Daoust, J. A..... Hébert, J. A. P... Boudet, E ..... Beaulac, J. H..... Hall, H. C-. ... . Wilson, J. C..... Galipeau, J.B.N.. MacBeth, W.....	7,449 84	600 00	....	1,000 00	2,373 06	180 51	11,603 41	14,055 72
Quebec.	Roy, C. E.... ... Guay, Alphonse .. Lebel, J. A. W... Préfontaine, F.H. Knowles, Chas.... Bourget, L. J. ... Petit, J. B. ... Bugeaud, J. F.. . Caldwell, A B.... Gauvin, B.....	7,441 33	600 00	....	475 00	1,892 30	294 92	10,703 55	5,030 80
St. Hyacinthe....	Morin, J. P..... Tomlinson, W. M. Thérien, J. F..... Dessert, V..... Desmarais, A..... Hall, H. C	3,649 80	533 28	....	.... ..	1,451 35	175 00	5,809 43	7,390 56
Trois-Rivières..	Gravel, A. I ..... Bolduc, E...	1,749 96	.....	....	.....	746 36	65 41	2,561 73	1,682 05
	Quebec.	20,290 93	1,733 28	....	1,475 00	6,463 07	715 84	30,678 12	28,159 13
St. John, N.B.....	Barry, James..... Bernier, J. A..... Leblanc, F. X .... White, H. E	3,314 61	.....	....	.....	392 31	73 97	3,780 89	2,125 15
Cape Breton	Laurence, G. C. ...	950 00		....	50 00	428 00	59 99	1,487 99	704 03
Halifax	Frame, A..... .. Cochrane, J. A.... Waugh, R..... Sargent, F. H.....	1,609 07	799 92	....	625 00	483 95	155 17	3,673 11	1,151 03
Pictou	Dustan, Wm .... Chisholm, J. J....	1,799 92		....		331 41	113 71	2,245 04	1,022 71
	Nova Scotia	4,358 99	799 92	..	675 00	1,243 36	328 87	7,406 14	2,877 77
Charlottetown, P.E.I.	Davy, E..... .. Hughes, H.... ...	1,749 96		....		259 70	84 79	2,094 45	601 56
Winnipeg, Man.	Magness, R. ..... Gilby, W. F..... McKay, R.. ..... Mager, J. G..... Spicer, H .... .. Thomson, J. C.... Grant, C. D	4,683 14	116 66	....		2,216 40	159 62	7,175 82	8,873 70

APPENDIX A

STATEMENT of Weights and Measures Expenditures and Revenues for the Fiscal Year ended March 31, 1910.

Inspection Divisions.	Inspectors and Assistants.	Expenditures. Salaries.	Special Assistance.	Seizures.	Rent.	Travelling Expenses.	Sundries.	Total.	Revenues.
		$ cts.	$ cts.	$ c.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Regina, Sas.	Grant, W. M. McDonald, A. W.	474 99				314 20	82 75	871 94	625 95
Calgary, Alta.	Costello, J. W. McDonald, A. W. Cook, J. Wilson, A. G.	1,974 99	586 50			2,078 56	107 3	4,747 39	4,564 44
Nelson	Parker, Thos.	1,150 00				1,040 70	48 30	2,239 00	881 90
Vancouver	Marshall, Robt. Findlay, H. Shaw, John Harris, W. H. Dutton, A. H.	2,841 53	1,108 27		540 00	334 80	519 68	5,344 28	1,871 70
	British Columbia	3,991 53	1,108 27		540 00	1,375 50	567 98	7,583 28	2,753 60
Dawson, Yukon	Macdonald, J. F	1,000 00					6 50	1,006 50	20 75

RECAPITULATION.

	Expenditures. Salaries.	Special Assistance.	Seizures.	Rent.	Travelling Expenses.	Sundries.	Total.	Revenues.
	$ cts.	$ cts.	$ c.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Ontario	28,630 43	591 93	30	416 25	8,546 06	1,221 73	39,406 70	42,187 25
Quebec	20,290 93	1,733 28		1,475 00	6,463 07	715 84	30,678 12	28,159 13
New Brunswick	3,314 61				392 31	73 97	3,780 89	2,125 15
Nova Scotia	4,358 99	799 92		675 00	1,243 36	328 87	7,406 14	2,877 77
Prince Edward Island	1,749 96				259 70	84 79	2,094 45	691 56
Manitoba	4,683 14	116 66			2,216 40	159 62	7,175 82	8,873 70
Saskatchewan	474 99				314 20	82 75	871 94	625 95
Alberta	1,974 99	586 50			2,078 56	107 34	4,747 39	4,564 44
British Columbia	3,991 53	1,108 27		540 00	1,375 50	567 98	7,583 28	2,753 60
Yukon	1,000 00					6 50	1,006 50	20 75
Chief Inspector					342 44	20 34	362 78	
General Contingencies						3,199 78	3,199 78	
Metric System						12 84	12 84	
Printing						473 03	473 03	
Stationery						601 12	601 12	
Lithography						180 00	180 00	
Provisional Allowance						491 47	491 47	
International Bureau of Weights and Measures						209 37	209 37	
	70,469 57	4,936 56	30	3,106 25	23,231 60	8,537 34	110,281 62	92,789 30

INLAND REVENUE DEPARTMENT,
OTTAWA, JUNE 9, 1910.

W. J. GERALD,
Deputy Minister.

APPENDIX

RETURN of Weights and Measures Inspected during the Fiscal Year ended March 31, each Division, for each Province,

INSPECTION DIVISION.	WEIGHTS.									MEASURES OF CAPACITY.					
	Dominion.			Troy.			Miscellaneous.			Dominion.			Miscellaneous.		
	Brought for Verification.	Verified.	Rejected.	Brought for Verification.	Verified.	Rejected.	Brought for Verification.	Verified.	Rejected.	Brought for Verification.	Verified.	Rejected.	Brought for Verification.	Verified.	Rejected.
Belleville	1,489	1,489	....	....	....	..	....	....	....	1,414	1,414	.	68	68	..
Hamilton	10,862	10,850	12	39	39	..	180	180	....	5,970	5,966	4	792	789	3
Kingston	2,000	2,000	....	....	....	..	6	6	....	3,676	3,676	..	77	77	..
Ottawa	6,226	6,203	23	....	....	..	....	....	....	1,953	1,913	40	1,235	1,235	..
Toronto	7,377	7,355	22	....	....	..	10	10	....	27,087	27,086	1	2,957	2,956	1
Windsor	3,475	3,474	1	..	..	..	....	....	....	18,035	18,035	..	34	32	2
Ontario	31,429	31,371	58	39	39	..	196	196	....	58,135	58,090	45	5,163	5,157	6
Montreal	11,278	11,260	18	393	393	..	323	323	....	29,060	29,060	..	3,473	3,473	..
Quebec	8,147	7,950	197	....	....	..	111	110	1	7,046	7,029	17	152	152	..
St. Hyacinthe	7,614	7,614	..	2	2	..	2	2	....	3,462	3,460	2	159	150	9
Three-Rivers	2,299	2,278	21	....	....	..	....	....	....	1,919	1,919	..	29	29	..
Quebec	29,338	29,102	236	395	395	..	436	435	1	41,487	41,468	19	3,813	3,804	9
St. John, N.B.	2,260	2,260	....	....	....	..	..	....	..	3,430	3,430	.	2,090	2,090	..
Cape Breton	408	408	....	....	....	..	....	....	....	746	740	6	33	33	.
Halifax	1,187	1,187	....	..	....	..	19	19	....	704	704	..	219	218	1
Pictou	829	828	1	....	....	..	3	3	....	546	546	..	142	142	..
Nova Scotia	2,424	2,423	1	....	....	..	22	22	....	1,996	1,990	6	394	393	1
Charlottetown, P.E.I.	631	631	....	....	..	..	....	....	....	136	136	..	27	27	..
Winnipeg, Man.	2,733	2,730	3	....	....	..	....	....	....	6,052	6,052	..	220	217	3
Regina, Sask.	168	168	....	....	..	..	....	....	....	109	109	..	16	16	..
Calgary, Alta	1,276	1,271	5	....	....	..	34	34	..	570	565	5	121	121	..
Nelson	262	262	....	....	..	..	....	....	....	101	101	..	9	9	..
Vancouver	664	664	....	....	....	..	....	....	....	67	67	..	....	....	..
British Columbia	926	926	....	....	....	..	....	....	....	168	168	..	9	9	..
Dawson, Yukon	....	....	....	....	..	..	....	....	....	....	....	..	....	..	..
Grand totals	71,185	70,882	303	431	434	..	688	687	1	112,083	112,008	75	11,853	11,834	19

INLAND REVENUE DEPARTMENT,
OTTAWA, June 9, 1910.

SESSIONAL PAPER No. 13

B.

1910, showing the Total Number brought for Verification, Verified and Rejected for and for the whole Dominion.

Measures of Length.			Balances, &c.											
			Equal Armed.			Steelyards.			Platform Scales, Weigh Bridges, &c.			Miscellaneous.		
Brought for Verification.	Verified.	Rejected.	Brought for Verification.	Verified.	Rejected.	Brought for Verification.	Verified.	Rejected.	Brought for Verification.	Verified.	Rejected.	Brought for Verification.	Verified.	Rejected.
86	86	....	290	290	....	32	32	...	1,725	1,725	....	255	255	...
510	485	25	3,157	3,073	84	1,511	1,467	44	6,191	5,818	373	3,062	3,039	23
320	320	....	352	352	....	62	62	....	3,102	3,102	.....	447	447	.. .
353	353	....	1,072	1,044	28	2	2	....	1,867	1,767	100	474	473	1
789	789	....	1,309	1,260	49	398	378	20	3,185	3,070	115	9,644	9,593	51
2,228	2,228	....	691	690	1	206	203	3	4,835	4,754	81	2,365	2,360	5
4,286	4,261	25	6,871	6,709	162	2,211	2,144	67	20,905	20,236	669	16,247	16,167	80
1,275	1,275	....	2,720	2,702	18	1,061	1,057	4	6,108	5,977	131	9,703	9,697	6
1,322	1,292	30	1,207	1,172	35	375	351	24	2,434	2,377	57	681	679	2
378	365	13	1,575	1,572	3	398	394	4	6,123	6,083	40	429	429	....
29	29	....	385	382	3	16	16	....	1,239	1,225	14	98	98	....
3,004	2,961	43	5,887	5,828	59	1,850	1,818	32	15,904	15,662	242	10,911	10,903	8
155	155	....	483	483	...	45	45	....	944	933	11	937	936	1
79	77	2	58	57	1	13	13	...	236	234	2	52	52	....
25	25	...	303	302	1	28	27	1	637	632	5	223	223	....
95	95	...	178	178	....	27	27	...	520	520	.. ...	132	132	....
199	197	2	539	537	2	68	67	1	1,393	1,386	7	407	407	...
2	2	...	137	137	..	20	20	....	399	399	.....	59	59	....
792	792	....	492	489	3	102	96	6	3,024	2,849	175	15,230	15,207	23
32	32	....	37	37	....	6	6	....	278	275	3	63	63	....
405	402	3	259	258	1	86	85	1	1,924	1,905	19	530	526	4
47	47	....	47	47	....	37	37	....	356	356	.... .	137	137	....
.....	.....	....	150	150	....	120	120	....	692	692	.....	1,291	1,291	....
47	47	....	197	197	....	157	157	....	1,048	1,048	.....	1,428	1,428	....
.....	....	. .	.....	. . ...	....	.....	.....	....	 1	1	.....	1	1	....
8,922	8,849	73	14,902	14,675	227	4,545	4,438	107	45,820	44,694	1,126	45,813	45,697	116

W. J. GERALD,
Deputy Minister.

APPENDIX

RETURN showing the number of Dominion Weights and Lineal Measures of each March

DOMINION

INSPECTION DIVISION.	Avoir														
	60 lbs.	50 lbs.	30 lbs.	25 lbs.	20 lbs.	10 lbs.	7 lbs.	5 lbs.	4 lbs.	3 lbs.	2 lbs.	1 lb.	8 ozs.	4 ozs.	2 ozs.
Belleville	....	....	..	..	....	1	1	47	85	194	347	318	154	181	69
Hamilton	....	57	1	..	5	13	20	178	242	2,455	3,274	3,104	389	308	329
Kingston	....	8	1	..	1	25	8	74	114	197	427	389	182	190	144
Ottawa	....	....	..	..	....	16	13	86	128	264	459	472	717	682	755
Toronto	....	75	4	1	3	311	11	939	619	742	1,775	1,148	380	347	328
Windsor	....	....	..	..	..	8	....	79	130	308	755	709	346	322	304
Ontario	....	140	6	1	9	374	53	1,403	1,348	4,160	7,037	6,140	2,168	2,030	1,929
Montreal	240	21	2	..	15	122	29	774	559	1,057	2,111	1,976	1,246	1,094	887
Quebec	....	39	9	10	58	81	336	551	627	988	1,190	1,080	1,021	916	724
St. Hyacinthe	....	515	..	..	4	16	16	135	742	374	2,207	1,747	544	393	357
Three Rivers	....	....	..	..	....	4	3	170	99	379	402	382	268	263	193
Quebec	240	575	11	10	77	223	384	1,630	2,027	2,798	5,940	5,185	3,079	2,666	2,161
St. John, N. B.	....	....	..	..	....	3	19	106	133	200	539	487	263	190	152
Cape Breton	....	191	..	..	1	3	1	7	11	59	68	52	13	2	.....
Halifax	....	2	..	..	1	3	9	30	79	116	376	303	103	67	55
Pictou	....	7	1	..	2	6	3	27	41	96	211	175	69	57	52
Nova Scotia	....	200	1	..	4	12	13	64	131	271	655	530	185	126	107
Charlottetown, P. E. I.	....	....	..	..	....	2	....	21	37	56	199	149	47	40	37
Winnipeg, Man.		58	..	..	..	27	17	85	151	219	648	520	184	184	160
Regina, Sask.	....	....	..	..	....	....	....	1	3	6	32	34	18	18	18
Calgary, Alta.		6	..	..	2	30	2	58	69	92	302	259	93	81	80
Nelson	....	....	..	..	....	3	2	4	16	16	62	50	20	17	20
Vancouver	6	8	4	..	8	13	1	21	42	42	160	148	48	34	32
British Columbia	6	8	4	..	8	21	3	25	58	58	222	198	68	51	52
Dawson, Yukon	....	....	..	..	..	....	....	.....	....	.....	.....	.....	.....	.....	.....
Grand totals	246	987	22	11	100	692	491	3,393	3,957	7,860	15,574	13,502	6,105	5,386	4,696

INLAND REVENUE DEPARTMENT,
OTTAWA, June 9, 1910.

SESSIONAL PAPER No. 13

C

Denomination presented in each Inspection Division during the Fiscal Year ended 31, 1910.

Weights.									Lineal Measures.										Miscellaneous measures.
dupois.							Troy Weights.	Miscellaneous Weights.											
1 oz.	8 drs.	4 drs.	2 drs.	1 dr.	½ dr.	Total Number.			6 feet.	5 feet.	1 yard.	½ yard.	2 feet.	1 foot.	½ feet.	100 feet chains.	66 feet chains.	Tape or riband.	Total number.	
56	25	8	2	1	....	1,489	.....	....	....	....	86	..	..	..	..	..	..	..	86	.....
228	189	49	12	7	2	10,862	39	180	....	....	510	..	..	..	..	..	..	..	510	.....
120	74	32	8	6	....	2,000	.. ..	6	....	.	320	..	..	..	..	..	..	..	320	.....
713	892	518	307	203	1	6,226	.....	.....	....	....	353	..	..	..	..	..	..	..	353	.....
291	188	104	35	46	...	7,377	.....	10	....	....	789	..	..	..	..	..	..	..	789	.....
277	152	73	8	3	1	3,475	.....	. ..	..	....	2,221	7	..	.	..	..	..	..	2,228	.....
1,685	1,520	784	372	266	4	31,429	39	196	...	...	4,279	7	..	..	..	..	.	..	4,286	.....
567	259	115	78	96	....	11,278	393	323	....	....	1,274	..	..	..	..	..	1	..	1,275	.....
367	118	16	14	2	....	8,147	.....	111	....	....	1,322	..	..	..	..	..	.	.	1,322	.....
330	176	46	7	5	...	7,614	2	2	....	....	378	..	..	..	..	..	..	..	378	... .
105	30	1	....	....	....	2,299	....	.....	....	....	29	..	..	..	..	..	..	..	29	....
1,369	583	178	99	103	....	29,338	395	436	....	....	3,003	.	..	..	..	..	1	..	3,004	.....
107	39	19	3	....	....	2,260	....	.....	....	....	155	..	..	..	..	..	..	.	155	.....
.....	.....	.....	....	....	....	408	.....	..	. .	....	79	..	..	..	..	..	..	..	79	.....
39	4	.....	....	....	....	1,187	.....	19	....	....	25	..	..	..	..	..	..	..	25	.....
43	24	12	3	...	....	829	.....	3	....	....	95	...	..	..	..	..	..	..	95	.....
82	28	12	3	....	....	2,424	.....	22	.. .	....	199	..	..	..	..	..	..	..	199	.....
29	9	4	1	....	...	631	.. ...	.....	....	....	2	..	..	..	..	..	..	..	2	.....
156	128	105	75	16	....	2,733	. ....	. ....	....	....	792	..	.	..	.	..	..	..	792	.....
18	13	4	3	....	....	168	.....	.....	....	....	32	..	..	..	..	.	..	..	32	.....
74	64	44	15	5	....	1,276	.....	34	....	....	405	..	..	..	..	..	..	..	405	.....
21	15	11	3	2	....	262	....	.....	...	....	47	..	..	..	..	..	..	..	47	.....
32	22	15	17	4	2	664	...	.....	....	....	.....	..	..	..	..	..	..	..	.....	.....
53	37	26	20	6	2	926	.....	.....	....	....	47	..	..	..	..	..	..	..	47	.....
.....	. ...	.....	....	....	....	.....	.....	... .	....	....	... ..	..	..	..	..	..	..	..	.....	.....
3,573	2,421	1,176	591	396	6	71,185	434	688	....	....	8,914	7	..	..	..	..	1	..	8,922	.....

W. J. GERALD,
Deputy Minister.

APPENDIX

RETURN showing the Number of Dominion Weights and Lineal Measures of
Year ended March 31,

INSPECTION DIVISION.	DOMINION Avoir														
	60 lbs.	50 lbs.	30 lbs.	25 lbs.	20 lbs.	10 lbs.	7 lbs.	5 lbs.	4 lbs.	3 lbs.	2 lbs.	1 lb.	8 ozs.	4 ozs.	2 ozs.
Belleville	....	....	..	..	....	1	1	47	85	194	347	318	154	181	69
Hamilton	....	57	1	..	5	13	20	178	242	2,454	3,273	3,103	388	307	326
Kingston	....	8	1	..	1	25	8	74	114	197	427	389	182	190	144
Ottawa	....	....	..	..	....	16	13	83	118	256	459	472	715	682	755
Toronto	....	75	4	1	3	311	11	939	648	741	1,769	1,142	377	344	327
Windsor	....	....	..	..	....	8	....	79	130	308	754	709	346	322	304
Ontario	...	140	6	1	9	374	53	1,400	1,337	4,150	7,029	6,133	2,162	2,026	1,925
Montreal	240	21	2	..	15	122	29	774	559	1,054	2,137	1,973	1,243	1,092	884
Quebec	....	39	9	10	57	79	332	529	613	950	1,155	1,048	991	897	722
St. Hyacinthe	....	515	..	..	4	16	16	135	742	374	2,207	1,747	544	393	357
Three Rivers	....	....	..	..	....	4	3	169	94	375	398	380	266	261	192
Quebec	240	575	11	10	76	221	380	1,607	2,008	2,753	5,897	5,148	3,047	2,643	2,155
St. John, N. B.	....	....	..	..	....	3	19	106	133	200	539	487	263	190	152
Cape Breton	...	191	..	..	1	3	1	7	11	59	68	52	13	2	.....
Halifax	....	2	..	..	1	3	9	30	79	116	376	303	103	67	55
Pictou	...	7	1	..	2	6	3	27	41	96	211	174	69	57	52
Nova Scotia	....	200	1	..	4	12	13	64	131	271	655	529	185	126	107
Charlottetown, P. E. I.	....	....	..	..	....	2	...	21	37	56	199	149	47	40	37
Winnipeg, Man.	....	58	..	..	...	27	17	85	151	219	648	517	184	184	160
Regina, Sask.	....	....	..	..	....	....	....	1	3	6	32	34	18	18	18
Calgary, Alta.	...	6	..	..	2	30	2	58	68	91	301	257	93	81	80
Nelson	....	....	..	..	....	3	2	4	16	16	62	50	20	17	20
Vancouver	6	8	4	..	8	18	1	21	42	42	160	148	48	34	32
British Columbia	6	8	4	..	8	21	3	25	58	58	222	198	68	51	52
Dawson, Yukon	....	....	..	..	....	....	....	..	.....	.....	.....	.....	.....	.....	.....
Grand totals	246	987	22	11	99	690	487	3,367	3,926	7,804	15,522	13,452	6,067	5,359	4,606

INLAND REVENUE DEPARTMENT,
OTTAWA, June 9, 1910.

SESSIONAL PAPER No. 13

C—*Continued.*

each Denomination, Verified in each Inspection Division during the Fiscal 1910—*Continued.*

Weights.									Lineal Measures.									Miscellaneous Measures.
dupois.							Troy Weights.	Miscellaneous Weights.										
1 oz.	8 drs.	4 drs.	2 drs.	1 dr.	½ dr.	Total number.			6 feet.	5 feet.	1 yard.	½ yard.	2 feet.	1 foot.	½ foot.	100 feet chains.	66 feet chains.	Tape or riband.	Total Number.	
56	25	8	2	1	....	1,489	....	.....	....	....	86	..	..	..	..	..	..	..	86	.....
225	188	49	12	7	2	10,850	39	180	....	....	485	..	..	..	..	..	..	..	485	.....
120	74	32	8	6	....	2,000	....	6	....	....	320	..	..	..	..	..	..	..	320	.....
713	892	518	307	203	1	6,203	.....	...	....	....	353	..	..	..	..	..	..	..	353	.....
290	188	104	35	46	....	7,355	.....	10	....	....	789	..	..	..	..	..	..	..	789	....
277	152	73	8	3	1	3,474	....	.....	....	....	2,228	..	..	..	..	..	..	..	2,228	.....
1,681	1,519	784	372	266	4	31,371	39	196	...	...	4,261	..	..	..	..	..	..	..	4,261	.....
567	259	115	78	96	....	11,260	393	323	....	....	1,275	..	..	..	..	..	..	..	1,275	.....
367	117	16	14	2	....	7,950	....	110	....	....	1,292	..	..	..	..	..	..	..	1,292	.....
330	176	46	7	5	....	7,614	2	2	....	....	365	..	..	..	..	..	..	..	365	....
105	30	1	....	....	...	2,278	.....	.....	....	....	29	..	..	..	..	..	..	..	29	.....
1,369	582	178	99	103	....	29,102	395	435	...	....	2,961	..	..	..	..	..	..	..	2,961	.....
107	39	19	3	....	....	2,260	.....	.....	....	....	155	..	..	..	..	..	..	..	155	
...	.....	.....	...	....	....	408	.....	...	....	....	77	..	..	..	..	..	..	..	77	....
39	4	.....	....	....	....	1,187	.....	19	....	....	25	..	..	..	..	..	..	..	25	
43	24	• 12	3	....	....	823	.. .	3	....	....	95	..	..	..	.	..	..	..	95	
82	28	12	3	...	....	2,423	.. .	22	....	....	197	..	..	..	..	..	..	..	197	.....
29	9	4	1	....	....	631	.....	....	....	....	2	..	..	..	..	..	..	..	2	.....
156	128	105	75	16	....	2,730		....	....	....	792	..	..	..	..	..	..	..	792	.....
18	13	4	3	....	....	168	.. ..	.....	....	....	32	..	..	..	..	..	..	..	32	.....
74	64	44	15	5	....	1,271	. ..	34	....	...	402	..	..	..	..	..	..	..	402	.....
21	15	11	3	2	....	262	.. ...	.. .	....	....	47	..	..	..	..	..	..	..	47	.....
32	22	15	17	4	2	664	.....	.....	....	....	.....	..	..	..	..	..	..	..	.....	.....
53	37	26	20	6	2	926	. .. .	.... .	...	....	47	..	..	..	..	..	..	..	47	.....
.. .	.....	.....	....	....	....	.....	.... .	. ..	....	....	.....	..	..	..	..	..	..	..	.....	.....
• 3,569	2,419	1,176	591	396	6	70,882	434	687	....	....	8,849	..	..	..	..	..	..	..	8,849	.....

W. J. GERALD,
Deputy Minister.

APPENDIX

RETURN showing the Number of Dominion Weights and Lineal Measures of each March 31, 1910

INSPECTION DIVISION.	DOMINION															
	Avoir															
	60 lbs.	50 lbs.	30 lbs.	25 lbs.	20 lbs.	10 lbs.	7 lbs.	5 lbs.	4 lbs.	3 lbs.	2 lbs.	1 lb.	8 oz.	4 ozs.	2 ozs.
Belleville															
Hamilton										1	1	1	1	1	3
Kingston															
Ottawa								3	10	8			2		
Toronto									1	1	6	6	3	3	1
Windsor											1				
Ontario								3	11	10	8	7	6	4	4
Montreal										3	4	3	3	2	3
Quebec					1	2	4	22	14	38	35	32	27	19	2
St. Hyacinthe															
Three Rivers								1	5	4	4	2	2	2	1
Quebec					1	2	4	23	19	45	43	37	32	23	6
St. John, N. B.															
Cape Breton															
Halifax															
Pictou															
Nova Scotia															
Charlottetown, P. E. I.															
Winnipeg, Man															
Regina, Sask.															
Calgary, Alta.														1	1
Nelson															
Vancouver															
British Columbia															
Dawson, Yukon															
Grand totals					1	2	4	26	30	55	51	44	38	28	11

INLAND REVENUE DEPARTMENT,
OTTAWA, June 9, 1910.

SESSIONAL PAPER No. 13

C—*Concluded.*

Denomination Rejected in each Inspection Division during the Fiscal Year ended —*Concluded.*

Weights.							Troy Weights.	Miscellaneous Weights.	Lineal Measures.									Miscellaneous Measures.
dupois.																		
1 oz.	8 drs.	4 drs.	2 drs.	1 dr.	½ dr.	Total number.			6 feet.	5 feet.	1 yard.	½ yard.	2 feet.	1 foot.	½ foot.	100 feet Chains.	66 feet Chains.	Tape or Riband.	Total Number.	
3	1					12					25								25	
						23														
1						22														
						1														
4	1					58					25								25	
						18														
	1					197		1			30								30	
											13								13	
						21														
	1					236		1			43								43	
											2								2	
1						1														
1						1					2								2	
3						3														
1	2					5					3								3	
9	4					303		1			73								73	

W. J. GERALD,
Deputy Minister.

1 GEORGE V., A. 1911

APPENDIX

RETURN showing the Number of Dominion Measures of Capacity, Balances and Division, during the Fiscal Year

INSPECTION DIVISION.	MEASURES OF CAPACITY. Dominion.											
	Bushel.	½ Bushel.	Peck.	Gallon.	½ Gallon.	Quart.	Pint.	½ Pint.	Gill.	½ Gill.	Total Number.	Miscellaneous.
Belleville	10	24	78	267	330	334	333	37	....	1	1,414	68
Hamilton	4	120	288	723	986	1,929	1,745	161	12	2	5,970	792
Kingston	55	281	321	565	747	955	631	118	3	...	3,676	77
Ottawa	...	3	41	402	563	596	295	52	1	...	1,953	1,235
Toronto	133	803	1,100	3,561	4,831	8,497	6,596	1,559	7	...	27,087	2,957
Windsor	444	674	1,014	2,862	2,185	5,623	3,457	1,576	200	....	18,035	34
Ontario	646	1,905	2,842	8,380	9,642	17,934	13,057	3,503	223	3	58,135	5,163
Montreal	....	1,005	1,239	4,987	4,783	7,254	7,926	1,642	224	....	29,060	3,473
Quebec	1	177	292	1,119	1,711	1,739	1,289	582	126	10	7,046	152
St. Hyacinthe	24	71	218	641	906	931	418	215	34	1	3,462	159
Three Rivers	....	29	42	297	574	564	298	102	12	1	1,919	29
Quebec	25	1,282	1,791	7,044	7,974	10,491	9,931	2,541	396	12	41,487	3,813
St. John, N.B.	...	195	181	547	888	924	491	195	9	....	3,430	2,090
Cape Breton	....	4	1	111	266	228	90	46	....	....	746	33
Halifax	....	5	....	101	167	193	141	81	16	....	704	219
Pictou	....	5	7	98	224	156	56	.....	....	....	546	142
Nova Scotia	....	14	8	310	657	577	287	127	16	....	1,996	394
Charlottetown, P.E.I.	....	.....	.....	3	7	82	44	.....	....	....	136	27
Winnipeg, Man.	116	13	54	1,290	1,506	2,028	967	76	1	1	6,052	220
Regina, Sask.	...	...	27	47	25	10	.....	.....	....	...	109	16
Calgary, Alta.	....	.....	181	200	126	57	5	1	....	....	570	121
Nelson	....	.....	...	21	38	28	12	2	....	....	101	9
Vancouver	..	.....	...	3	.....	39	25	...	....	....	67	.....
British Columbia	....	....	.....	24	38	67	37	2	....	....	168	9
Dawson, Yukon	....	.....	.	.....	....	.....	.....	.....	...	....	.....	....
Grand totals	787	3,109	5,084	17,845	20,863	32,170	24,819	6,445	645	16	112,083	11,853

INLAND REVENUE DEPARTMENT,
OTTAWA, June 9, 1910.

SESSIONAL PAPER No. 13

D

Weighing Machines of each Denomination presented for Verification in each Inspection ended 31st March, 1910.

BALANCES.

With equal arms.				Steelyards with divided arms.				Weigh Bridges on Platform Scales.							
5 lbs. and under.	6 lbs. to 50 lbs.	51 lbs. to 100 lbs.	101 lbs. and upwards.	500 lbs. and under.	501 lbs. to 1,000 lbs.	1,001 lbs. to 2,000 lbs.	2,001 lbs. and upwards.	250 lbs. and under.	251 lbs. to 500 lbs.	501 lbs. to 2,000 lbs.	2,001 lbs. to 4,000 lbs.	4,001 lbs. to 6,000 lbs.	6,001 lbs. and upwards.	Total.	Miscellaneous.
117	173	....	...	28	....	2	2	531	123	668	142	60	201	2,047	255
1,483	1,673	1	....	1,467	8	36	....	3,256	63	2,131	250	65	426	10,859	3,062
132	219	....	1	60	2	....	....	573	167	2,103	69	43	147	3,516	447
794	263	9	6	2	....	....	....	777	139	711	71	47	122	2,941	474
426	883	....	....	377	12	7	2	1,428	128	940	228	82	379	4,892	9,644
337	353	1	....	197	7	2	....	718	99	3,093	258	80	587	5,732	2,365
3,289	3,564	11	7	2,131	29	47	4	7,283	719	9,646	1,018	377	1,862	29,987	16,247
864	1,854	2	....	1,032	13	3	13	2,208	1,138	2,067	216	155	324	9,889	9,703
253	939	....	15	375	....	....	....	837	694	727	67	17	92	4,016	681
620	955	....	...	365	18	8	7	2,519	922	2,034	178	290	180	8,096	429
58	327	....	....	16	....	....	....	406	373	397	17	21	25	1,640	98
1,795	4,075	2	15	1,788	31	11	20	5,970	3,127	5,225	478	483	621	23,641	10,911
145	338	...	....	37	5	3	....	379	167	281	27	8	82	1,472	937
15	42	....	1	13	....	....	....	118	37	46	3	9	23	307	52
91	211	....	1	28	...	....	....	310	67	160	13	6	81	968	223
47	92	39	.. .	26	1	....	....	203	88	140	20	22	47	725	132
153	345	39	2	67	1	....	....	631	192	346	36	37	151	2,000	407
38	99	....	....	19	..	....	1	122	40	188	13	14	22	556	59
145	317	,	....	101	1	....	...	697	39	772	218	554	744	3,618	15,230
24	13	....	....	6	....	....	....	80	4	42	3	73	76	321	63
152	104	3	....	62	9	12	3	484	41	568	41	243	547	2,269	330
23	24	....	...	20	2	13	2	150	8	121	13	4	60	440	137
65	84	....	1	83	11	25	1	233	29	318	28	13	71	962	1,291
88	108	....	1	103	13	38	3	383	37	439	41	17	131	1,402	1,428
...	...	....	.. .	... .	....	....	...	.....	.....	1	.....	.....	.....	1	1
5,829	8,993	55	25	4,314	89	111	31	16,029	4,366	17,508	1,875	1,806	4,236	65,267	45,813

W. J. GERALD,
Deputy Minister.

APPENDIX

RETURN showing the Number of Dominion Measures of Capacity, Balances and during the Fiscal Year ended

MEASURE OF CAPACITY.

Dominion.

INSPECTION DIVISION.	Bushel.	½ bushel.	Peck.	Gallon.	½ gallon.	Quart.	Pint.	½ pint.	Gill.	½ gill.	Total Number.	Miscellaneous.
Belleville	10	24	78	267	330	334	333	37	....	1	1,414	68
Hamilton	4	120	286	721	986	1,929	1,745	161	12	2	5,966	789
Kingston	55	281	321	565	747	955	631	118	3	....	3,676	77
Ottawa	....	2	40	395	556	584	289	46	1	....	1,913	1,235
Toronto	133	803	1,099	3,561	4,831	8,497	6,596	1,559	7	...	27,086	2,956
Windsor	444	674	1,014	2,862	2,185	5,623	3,457	1,576	200	...	18,035	32
Ontario	646	1,904	2,838	8,371	9,635	17,922	13,051	3,497	223	3	58,090	5,157
Montreal	....	1,005	1,239	4,987	4,783	7,254	7,926	1,642	224	....	29,060	3,473
Quebec	1	174	290	1,116	1,709	1,735	1,287	581	126	10	7,029	162
St. Hyacinthe	24	71	218	641	906	933	417	215	34	1	3,460	150
Three Rivers	...	29	42	297	574	564	298	102	12	1	1,919	29
Quebec	25	1,279	1,789	7,041	7,972	10,486	9,928	2,540	396	12	41,468	3,804
St. John, N.B	...	195	181	547	888	924	491	195	9	....	3,430	2,090
Cape Breton	...	4	1	111	266	222	90	46	....	....	740	33
Halifax	...	5	.	101	167	193	141	81	16	....	704	218
Pictou	...	5	7	98	224	156	56	..	...	...	546	142
Nova Scotia	....	14	8	310	657	571	287	127	16	....	1,990	393
Charlottetown, P.E.I.	...	.....	.....	3	7	82	44	...	...	....	136	27
Winnipeg, Man.	116	13	54	1,290	1,506	2,028	967	76	1	1	6,052	217
Regina, Sask	...	.....	...	27	47	25	10	....	...	....	109	16
Calgary, Alta.	....	...	.....	178	198	126	57	5	1	....	565	121
Nelson	....	.....	.. ..	21	38	28	12	2	...	....	101	9
Vancouver	...	...	.....	3	.....	39	25	.....	..	....	67	...
British Columbia	....	.....	...	24	38	67	37	2	....	....	168	9
Dawson, Yukon	...	...	..	.....	.....	.....	....	....	....	..	.....	...
Grand totals	787	3,405	4,870	17,791	20,948	32,231	24,872	6,442	646	16	112,008	11,831

INLAND REVENUE DEPARTMENT,
OTTAWA, June 9, 1910.

SESSIONAL PAPER No. 13

D—*Continued.*

Weighing Machines of each Denomination, Verified, in each Inspection Division March 31, 1910—*Continued.*

BALANCES.

With Equal Arms.				Steel Yards with Divided Arms.				Weigh Bridges or Platform Scales.							
5 lbs. and under	6 lbs. to 50 lbs.	51 lbs. to 100 lbs.	101 lbs. and upwards.	500 lbs. and under.	501 lbs. to 1,000 lbs.	1,001 lbs. to 2,000 lbs.	2,001 lbs. and upwards.	250 lbs. and under.	251 lbs. to 500 lbs.	501 lbs. to 2,000 lbs.	2,001 lbs. to 4,000 lbs.	4,001 lbs. to 6,000 lbs.	6,001 lbs. and upwards.	Total.	Miscellaneous.
117	173	....	....	28	...	2	2	531	123	668	142	60	201	2,047	255
1,469	1,603	1	....	1,423	8	36	...	3,156	59	1,973	208	62	360	10,358	3,039
132	219	....	1	60	2	....	....	573	167	2,103	69	43	147	3,516	447
780	251	7	6	2	....	....	....	739	121	680	65	45	117	2,813	473
417	843	..	....	357	12	7	2	1,395	125	887	220	80	363	4,708	9,593
337	352	1	....	194	7	2	....	704	94	3,063	252	80	561	5,647	2,360
3,252	3,441	9	7	2,064	29	47	4	7,098	689	9,374	956	370	1,749	29,089	16,167
852	1,848	2	....	1,028	13	3	13	2,184	1,113	2,025	212	141	302	9,736	9,697
245	912	...	15	351	....	....	....	830	682	699	63	16	87	3,900	679
620	952	....	....	361	18	8	7	2,511	912	2,029	177	289	174	8,049	429
56	326	....	..	16	....	....	....	404	367	391	17	21	25	1,623	98
1,773	4,038	2	15	1,756	31	11	20	5,929	3,074	5,135	469	467	588	23,308	10,903
145	338	....	...	37	5	3	....	376	167	277	25	7	81	1,461	936
14	42	...	1	13	....	....	....	117	37	46	2	9	23	304	52
91	210	....	1	27	....	....	....	309	65	159	12	6	81	961	223
47	92	39	...	26	1	....	....	203	88	140	20	22	47	725	132
152	344	39	2	66	1	....	....	629	190	345	34	37	151	1,990	407
38	99	....	....	19	....	...	1	122	40	188	13	14	22	556	59
143	346	....	...	95	1	....	....	636	39	731	213	531	699	3,434	15,207
24	13	....	....	6	....	....	....	79	4	42	3	72	75	318	63
152	103	3	...	62	9	11	3	480	41	557	41	241	545	2,248	526
23	24	....	....	20	2	13	2	150	8	121	13	4	60	440	137
65	84	....	1	83	11	25	1	233	29	318	28	13	71	962	1,291
88	108	....	1	103	13	38	3	383	37	439	41	17	131	1,402	1,428
.....	.....	....	....	.....	....	....	....	.....	.....	1	.....	.....	.....	1	1
5,767	8,830	53	25	4,208	89	110	31	15,732	4,281	17,089	1,795	1,756	4,041	63,807	45,597

W. J. GERALD,
Deputy Minister.

RETURN shewing the Number of Dominion Measures of Capacity, Balances, and during the Fiscal Year ended

INSPECTION DIVISION.	MEASURES OF CAPACITY. Dominion.											
	Bushel.	½ bushel.	Peck.	Gallon.	½ gallon.	Quart.	Pint.	½ pint.	Gill.	½ gill.	Total number.	Miscellaneous.
Belleville												
Hamilton			2	2							4	3
Kingston												
Ottawa		1	1	7	7	12	6	6			40	
Toronto			1								1	1
Windsor												2
Ontario		1	4	9	7	12	6	6			45	6
Montreal												
Quebec		3	2	3	2	4	2	1			17	
St. Hyacinthe						1	1				2	9
Three Rivers												
Quebec		3	2	3	2	5	3	1			19	9
St. John, N. B.												
Cape Breton						6					6	
Halifax												1
Pictou												
Nova Scotia						6					6	1
Charlottetown, P.E.I.												
Winnipeg, Man.												3
Regina, Sask.												
Calgary, Alta.				3	2						5	
Nelson												
Vancouver												
British Columbia												
Dawson, Yukon												
Grand totals		4	6	15	11	23	9	7			75	

INLAND REVENUE DEPARTMENT,
OTTAWA, June 9, 1910.

Weighing Machines of each Denomination Rejected, in each Inspection Division, March 31, 1910.—*Concluded.*

BALANCES.

With equal arms.				Steel-yards with divided arms.				Weigh Bridges or Platform Scales.							Miscellaneous.
5 lbs. and under	6 lbs. to 50 lbs.	51 lbs. to 100 lbs.	101 lbs. and upwards.	500 lbs. and under.	501 lbs. to 1,000 lbs.	1,001 lbs. to 2,000 lbs.	2,001 lbs. and upwards.	250 lbs. and under.	251 lbs. to 500 lbs.	501 lbs. to 2,000 lbs.	2,001 lbs. to 4,000 lbs.	4,001 lbs. to 6,000 lbs.	6,001 lbs. and upwards.	Total.	
14	70	....	....	44	....	....	....	100	4	158	42	3	66	501	23
14	12	2	....	....	....	....	....	38	18	31	6	2	5	128	1
9	40	....	....	20	....	....	....	33	3	53	8	3	16	184	51
1	....	....	....	3	....	....	....	14	5	30	6	....	26	85	5
38	122	2	....	67	....	....	....	185	30	272	62	7	113	898	80
12	6	....	....	4	....	....	....	24	25	42	4	14	22	153	6
8	27	....	....	24	....	....	....	7	12	38	4	1	5	116	2
....	3	....	....	4	....	....	....	8	10	14	1	1	6	47	....
2	1	....	....	....	....	....	....	2	6	6	....	....	....	17	....
22	37	....	....	32	....	....	....	41	53	90	9	16	33	333	8
....	....	....	....	....	....	....	....	3	....	4	2	1	1	11	1
1	....	....	....	....	....	....	....	1	....	....	1	....	....	3	....
....	1	....	....	1	....	....	....	1	2	1	1	....	....	7	....
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1	1	....	....	1	....	....	....	2	2	1	2	....	....	10	....
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
2	1	....	....	6	....	....	....	61	....	41	5	23	45	184	23
....	....	....	....	....	....	....	....	1	....	....	....	1	1	3	....
....	1	....	....	....	....	1	....	4	....	11	....	2	2	21	4
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
63	162	2	....	106	....	1	....	297	85	419	80	50	195	1,460	116

W. J. GERALD,
Deputy Minister.

APPENDIX E.

STATEMENT of Gas Inspection Expenditures and Revenues for the Fiscal Year ended March 31, 1910.

Districts.	Inspectors and Assistants.	Expenditures. Salaries.	Special Assistance	Rent.	Travelling Expenses.	Sundries.	Total.	Revenues.
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Barrie	Shanacy, M.	100 00					100 00	129 00
Belleville	Johnson, Wm. Stuart, W. E.	549 96		162 50		19 50	731 96	257 25
Berlin	Broadfoot, S. Powell, J. B.	100 00			47 85	33 73	181 58	454 25
Brockville	Fraser, H.	100 00						351 50
Cobourg	Bickle, J. W.	100 00			27 60	29 45	157 05	152 75
Cornwall	Mulhern, M. M.	16 66					16 66	10 50
Guelph	Broadfoot, S.	228 70				31 45	260 15	368 75
Hamilton	McPhie, D. Murphy, F. C. McPhie, W. H. Dennis, W. A.	3,799 82		120 00	176 85	108 56	4,205 23	5,971 75
Kingston	Fraser, H							731 75
Listowel	Male, Thos.	100 00		78 00		12 50	190 50	44 50
London	Nash, A. F. Skelton, A. R.	2,250 00			405 25	260 68	2,915 93	6,964 25
Napanee	Johnson, Wm. (actg)				32 80	14 15	46 95	59 25
Ottawa	Roche, H. G. Bond, M. B. Roche, W. J.	3,099 96		150 00		84 83	3,334 79	1,604 25
Owen Sound	Graham, W. J.	200 00		93 75	26 30	36 27	356 32	162 25
Peterborough	Rork, Thos.	150 00				4 65	154 65	231 75
Sarnia	Thrasher, W. A.	199 92				4 80	204 72	791 00
Stratford	Rennie, Geo.	200 00				13 00	213 00	178 50
Toronto	Johnstone, J. K. Pape, Jas. Renahan, M. J. Stiver, J. L. Hunter, W. M.	5,958 16			6 00	114 37	6,078 53	14,666 25
Woodstock	Orr, H. N.	199 92				12 00	211 92	389 50
	Ontario	17,253 10		604 25	722 65	779 94	19,359 94	33,519 00
Montreal	Aubin, A. O'Flaherty, M. J. Aubin, Chs.	4,749 86		210 00	46 25	167 65	5,203 76	13,790 95
Quebec	Levasseur, N. Béland, F. X. J. E.	1,455 53		150 00	8 00	140 68	1,749 21	835 75
Sherbrooke	Simpson, A. F. Bowen, F. C.	249 96					249 96	89 25
St. Hyacinthe	Benoit, L. V.	100 00					100 00	63 00
	Quebec	6,555 35		390 00	49 25	308 33	7,302 93	14,778 95
Fredericton	Wilson, J. E.	100 00			90 20	1 40	191 60	30 00
St. John	Wilson, J. E.	1,200 00			68 15	23 37	1,291 52	523 75
	New Brunswick	1,300 00			158 35	24 77	1,483 12	553 75
Halifax	Cotter, W. F. Muro, H. D. Toale, John.	1,300 00	600 00	625 00	307 73	115 41	2,948 14	391 50
Charlottetown	Bell, J. H.	450 00					450 00	72 25

SESSIONAL PAPER No. 13

APPENDIX E—*Concluded.*

STATEMENT of the Gas Inspection Expenditures and Revenues for the Fiscal Year ended March 31, 1910.

Districts.	Inspectors and Assistants.	Expenditures.						Revenues.
		Salaries.	Special Assistance	Rent.	Travelling Expenses.	Sundries.	Total.	
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Winnipeg	Magness, R. Hamilton, R. Mager, J. G.	1,999 90	183 33			32 20	2,215 43	2,042 75
Nanaimo	Shaw, John	100 00				4 95	104 95	90 59
New Westminster	Wolfenden, Wm.	200 00					200 00	107 50
Vancouver	Templeton, W. A. Stott, Jas.				20 80	116 53	137 33	2,363 50
Victoria	Jones, R.	300 00					300 00	411 50
	British Columbia.	600 00			20 80	121 48	742 28	2,973 00

RECAPITULATION.

—	Expenditures.						Revenues.
	Salaries.	Special Assist'nce.	Rent.	Travelling Expenses.	Sundries.	Total.	
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Ontario	17,253 10		604 25	722 65	779 94	19,359 94	33,519 00
Quebec	6,555 35		390 00	49 25	308 33	7,302 93	14,778 95
New Brunswick	1,300 00			158 35	24 77	1,483 12	553 75
Nova Scotia	1,300 00	600 00	625 00	307 73	115 41	2,948 14	391 50
Prince Edward Island	450 00					450 00	72 25
Manitoba	1,999 90	183 33			32 20	2,215 43	2,042 75
British Columbia	600 00			20 80	121 48	742 28	2,973 00
General Contingencies					784 28	784 28	
Printing					436 99	436 99	
Stationery					549 23	549 23	
Lithographing					361 21	361 21	
Grand Totals	29,458 35	783 33	1,619 25	1,258 78	3,513 84	36,633 55	54,331 20

W. J. GERALD,
Deputy Minister.

INLAND REVENUE DEPARTMENT,
OTTAWA, June 9, 1910.

APPENDIX

Return of the Illuminating Power and Purity of Gas

Inspection Office.	Illuminating Power—Standard. 15 Candles.					Sulphur per 100 Allowance—		
	Highest.	Lowest.	Average.	No. of times below standard.	No. of Tests.	Highest	Lowest.	Average
	Candles.	Candles.	Candles.			Grains.	Grains.	Grains.
Barrie—								
April			16·10	0	1			
May			15·80	1	1			
June			17·50	0	1			
July			16·60	0	1			
August			16·90	0	1			
September			17·40	0	1			
October			18·30	0	1			
November			16·80	0	1			
December			16·20	0	1			
January			16·10	0	1			
February			16·92	0	1			
March			16·40	0	1			
				1	12			
Belleville—								
April			19·86	0	1			
May			19·96	0	1			
June	20·89	20·59	20·74	0	2			
July	18·37	17·79	18·08	0	2			
August	19·15	18·46	18·80	0	2			
September	18·26	15·12	16·69	1	2			
October	19·66	18·75	19·20	0	2			
November	19·00	18·50	18·75	0	2			
December	20·63	19·50	20·07	0	2			
January	18·58	18·35	18·46	0	2			
February	17·51	17·00	17·25	0	2			
March	17·35	16·33	16·84	0	2			
				1	22			
Deseronto—								
April			20·01	0	1			
May			20·04	0	1			
June			20·01	0	1			
July			18·66	0	1			
August			19·04	0	1			
September			21·03	0	1			
October			19·08	0	1			
November			21·03	0	1			
December			19·03	0	1			
January			18·84	0	1			
February			19.64	0	1			
March			18·80	0	1			
				0	12			

SESSIONAL PAPER No. 13

F.

Inspected during the Year ended March 31, 1910.

Cubic Feet. 35 Grains.		Ammonia per 100 Cubic Feet. Allowance—4 Grains.					Sulphuretted Hydrogen.			Remarks.
No. of times in excess of allowance.	No. of tests.	Highest. Grains.	Lowest. Grains.	Average. Grains.	Times in excess of allowance.	No. of tests.	No. of times absent.	No. of times present.	No. of tests.	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	
							1	0	1	
							1	0	1	
							2	0	2	
							2	0	2	
							2	0	2	
							1	2	3	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							21	2	23	
							1	0	1	
							1	0	1	
							1	0	1	
										No test for Sul. Hyd. on account of slight accident.
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							11	0	11	

APPENDIX

Return of the Illuminating Power and Purity of Gas

Inspection Office.	Illuminating Power.—Standard. 16 Candles.					Sulphur per 100 Allowance—		
	Highest.	Lowest.	Average.	No. of times below standard.	No. of tests.	Highest	Lowest.	Average
	Candles.	Candles.	Candles.			Grains.	Grains.	Grains.
Berlin—								
April			18.27	0	1			
May			18.03	0	1			
June			18.07	0	1			
July			17 25	0	1			
August			16 78	0	1			
September			16.14	0	1			
October			17.16	0	1			
November			16.98	0	1			
December			16.88	0	1			
January			18.63	0	1			
February			16.99	0	1			
March			18.23	0	1			
				0	12			
Brockville—								
April	20 00	20.00	20.00	0	2			
May	20.60	20.00	20.20	0	3			
June	20.00	20.00	20.00	0	2			
July	20.00	20.00	20.00	0	3			
August	22.00	21.00	21.50	0	2			
September	22.00	21 00	21.30	0	3			
October	21.00	20.00	20.50	0	2			
November	23.00	20.00	21.50	0	4			
December			19.50	0	1			
January			20.00	0	1			
February	20.50	20.00	20.25	0	2			
March	20.50	20.00	21.50	0	3			
				0	28			
Cobourg—								
April			18.34	0	1			
May			17.02	0	1			
June			17.70	0	1			
July			18.78	0	1			
August			17.36	0	1			
September			18 08	0	1			
October			17.92	0	1			
November			18.89	0	1			
December			17 49	0	1			
January			17.44	0	1			
February			18.67	0	1			
March			17.45	0	1			
				0	12			

SESSIONAL PAPER No. 13

F.—*Continued.*

Inspected during the Year ended March 31, 1910.

Cubic Feet. 35 Grains.		Ammonia per 100 Cubic Feet. Allowance—4 Grains.					Sulphuretted Hydrogen.			Remarks.
No. of times in excess of allowance.	No. of Tests.	Highest.	Lowest.	Average.	Times in excess of allowance.	No. of tests.	No. of times absent.	No. of times present.	No. of Tests.	
		Grains.	Grains.	Grains.						
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	
							2	0	2	
							3	0	3	
							2	0	2	
							3	0	3	
							2	0	2	
							3	0	3	
							2	0	2	
							4	0	4	
							2	0	2	
							2	0	2	
							3	0	3	
							30	0	30	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							22	2	24	

APPENDIX

Return of the Illuminating Power and Purity of Gas

Inspection Office.	Illuminating Power.—Standard. 16 Candles.					Sulphur per 100 Allowance—		
	Highest.	Lowest.	Average.	No. of times below standard.	No. of Tests.	Highest	Lowest.	Average
	Candles.	Candles.	Candles.			Grains.	Grains.	Grains.
Port Hope—								
April			18·76	0	1			
May			18·95	0	1			
June			17·96	0	1			
July			18·75	0	1			
August			18·58	0	1			
September			20·26	0	1			
October			18·92	0	1			
November			19·92	0	1			
December			19·79	0	1			
January			18·86	0	1			
February			18·67	0	1			
March			17·20	0	1			
				0	12			
Cornwall—								
April			18·05	0	1			
May			18·11	0	1			
June			18·10	0	1			
July								
August								
September								
October								
November								
December								
January								
February								
March								
				0	3			
Guelph—								
April			18·04	0	1			
May			17·92	0	1			
June			18·28	0	1			
July			18·20	0	1			
August			17·81	0	1			
September			18·05	0	1			
October			17·92	0	1			
November			18·34	0	1			
December			17·89	0	1			
January			18·57	0	1			
February			17·18	0	1			
March			17·80	0	1			
				0	12			

SESSIONAL PAPER No. 13

F—*Continued.*

Inspected during the year ended March 31, 1910.

Cubic Feet. 35 Grains.		Ammonia per 100 Cubic Feet. Allowance—4 Grains.					Sulphuretted Hydrogen.			Remarks.
No. of times in excess of allowance.	No. of tests.	Highest.	Lowest.	Average.	Times in excess of allowance.	No. of tests.	No. of times absent.	No. of times present.	No. of tests.	
		Grains.	Grains.	Grains.						
.....	.....	.. ..	... .	.....	.....	.....	2	0	2	
.....	.....	.....	.....	.....	.. ....	.....	2	0	2	
.....	. ....	.....	....	.....	.....	.....	2	0	2	
.....	.....	....	.....	.....	.....	.....	2	0	2	
.....	.....	.....	.....	.....	.....	.	2	0	2	
.....	.....	.....	.....	....	....	...	2	0	2	
.....	... ..	. .....	.....	.....	.....	.....	2	0	2	
.....	.....	.....	.....	.....	.....	.....	2	0	2	
.....	.....	.....	.....	.....	.....	.....	2	0	2	
.....	.. ...	.....	....	... .	.....	.....	2	0	2	
.....	.....	.....	.....	.....	... ...	.....	2	0	2	
... ...	....	.....	....	....	.....	.....	2	0	2	
							24	0	24	
.....	....	....	.....	.....	.....	.....	1	0	1	
.....	. ..	.....	.....	....	.....	.....	1	0	1	
.....	.....	.....	.....	.....	.....	.....	1	0	1	
....	....	....	.....	.....	.....	.....	.....	.....	.....	No officer in charge.
.....	.....	.. ..	. .....	... .	.....	.....	.....	.....	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
.....	.....	.....	.....	... ...	. ....	...	.....	.....	.....	
.....	.....	....	.....	.....	.....	.. ..	.....	.....	.....	
.....	.....	....	.....	.....	.....	.....	.....	.....	.....	
.....	. .	.....	... . .	.....	.....	.....	.....	.....	.....	
... .	.....	....	....	....	... ...	... ..	.....	.....	.....	
.....	.....	....	.....	... .	.....	.....	.....	.....	.....	
							3	0	3	
.....	... .	. ...	.... ..	.....	.....	.....	1	0	1	
.....	.. ..	..... .	.....	.... . .	.....	.....	1	0	1	
.....	...	.....	.....	... .	.....	.....	1	0	1	
.....	.....	.....	.....	.....	.....	.....	1	0	1	
....	.....	.....	.....	... . .	.....	.....	1	0	1	
.....	.....	.....	.....	....	.....	.....	1	0	1	
.....	.. ..	.....	.....	.....	.....	.....	1	0	1	
.....	.....	....	.....	.....	.....	.....	1	0	1	
.....	. . ..	.....	.....	.....	.....	.....	1	0	1	
.....	.....	..... .	.....	.....	.....	.....	1	0	1	
							12	0	12	

APPENDIX

Return of the Illuminating Power and Purity of Gas

Inspection Offices.	Illuminating Power.—Standard. 16 Candles.					Sulphur per 100 Allowance		
	Highest.	Lowest.	Average.	No. of times below standard.	No. of Tests.	Highest	Lowest.	Average
	Candles.	Candles.	Candles.			Grains.	Grains.	Grains.
Hamilton—								
April	18.26	18.04	18.15	0	2			
May	18.37	18.06	18.21	0	2			
June	18.16	17.97	18.06	0	2			
July	18.21	18.04	18.12	0	2			
August	18.33	18.26	18.29	0	2			
September	18.26	18.05	18.18	0	3			
October	18.33	18.05	18.19	0	2			
November	18.39	18.23	18.31	0	2			
December	18.20	17.99	18.09	0	2			
January	18.39	18.22	18.05	0	2			
February	18.26	18.23	18.24	0	2			
March	18 00	17.73	17.89	0	3			
				0	26			
Bertie Natural Gas Co.—								
April								
May								
June								
July								
August								
September								
October								
November								
December								
January								
February								
March								
Brantford Natural Gas Co.—								
April								
May								
June								
July								
August								
September								
October								
November								
December								
January								
February								
March								

SESSIONAL PAPER No. 13

F.—*Continued.*

Inspected during the Year ended March 31, 1910.

Cubic Feet. 35 Grains.		Ammonia per 100 Cubic Feet. Allowance—4 Grains.					Sulphuretted Hydrogen.			Remarks.
No. of times in excess of allowance.	No. of Tests.	Highest.	Lowest.	Average.	Times in excess of allowance.	No. of Tests.	No. of times absent.	No. of times present.	No. of Tests.	
		Grains.	Grains.	Grains.						
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							3	0	3	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							3	0	3	
							26	0	26	
							1	0	1	
							1	0	1	
							2	0	2	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	

APPENDIX

Return of the Illuminating Power and Purity of Gas

Inspection Offices.	Illuminating Power.—Standard. 16 Candles.					Sulphur per 100 Allowance—		
	Highest.	Lowest.	Average.	No. of times below standard.	No. of times.	Highest	Lowest.	Average
	Candles.	Candles.	Candles.			Grains.	Grains.	Grains.
Dominion Natural Gas Co., Dundas and Dunnville—								
April								
May								
June								
July								
August								
September								
October								
November								
December								
January								
February								
March								
Mutual Natural Gas Co., Port Colborne and Welland—								
April								
May								
June								
July								
August								
September								
October								
November								
December								
January								
February								
March								
Port Colb. & Welland Gas Co.—								
April								
May								
June								
July								
August								
September								
October								
November								
December								
January								
February								
March								

SESSIONAL PAPER No. 13

F—*Continued.*

Inspected during the Year ended March 31, 1910.

Cubic Feet. 35 Grains.		Ammonia per 100 Cubit Feet. Allowance—4 Grains.					Sulphuretted Hydrogen.			Remarks.
No. of times in excess of allowance.	No. of Tests.	Highest.	Lowest.	Average.	Times in excess of allowance.	No. of Tests.	No. of times absent.	No. of times present.	No of Tests.	
		Grains.	Grains.	Grains.						
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							3	0	3	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							3	0	3	
							26	0	26	
							0	1	1	
							0	1	1	
							0	1	1	
							0	1	1	
							0	1	1	
							0	1	1	
							0	1	1	
							0	7	7	
							1	0	1	
							1	0	1	
							2	0	2	

APPENDIX

Return of the Illuminating Power and Purity of Gas

Inspection Office.	Illuminating Power.—Standard, 16 Candles.					Sulphur per 100 Allowance—		
	Highest.	Lowest.	Average.	No. of times below standard.	No. of tests.	Highest	Lowest.	Average
	Candles.	Candles.	Candles.			Grains.	Grains.	Grains.
Provincial Natural Gas Co., Niagara Falls—								
April								
May								
June								
July								
August								
September								
October								
November								
December								
January								
February								
March								
St. Catherines Gas Co. Ltd.—								
April			16·96	0	1			
May			17·51	0	1			
June			16·91	0	1			
July			17·06	0	1			
August			17·28	0	1			
September			16·75	0	1			
October			16·42	0	1			
November			16·28	0	1			
December			16·34	0	1			
January			16·75	0	1			
February			17·14	0	1			
March			17·52	0	1			
				0	12			
Dominion Natural Gas Co., Galt.—								
April								
May								
June								
July								
August								
September								
October								
November								
December								
January								
February								
March								

SESSIONAL PAPER No. 13

F—*Continued.*

Inspected during the Year ended March 31, 1910.

Cubic Feet. 35 Grains.		Ammonia per 100 Cubic Feet. Allowance—4 Grains.					Sulphuretted Hydrogen.			Remarks.
No. of times in excess of allowance.	No. of tests.	Highest.	Lowest.	Average.	Times in excess of allowance.	No. of tests.	No. of times absent.	No. of times present.	No. of tests.	
		Grains.	Grains.	Grains.						
							0	2	2	
							0	2	2	
							0	2	2	
							0	2	2	
							0	2	2	
							0	3	3	
							0	4	4	
							0	4	4	
							0	5	5	
							0	4	4	
							0	4	4	
							0	5	5	
							0	39	39	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	

APPENDIX

Return of the Illuminating Power and Purity of Gas

Inspection Office.	Illuminating Power.—Standard. 16 Candles.					Sulphur per 100 Allowance-		
	Highest.	Lowest.	Average.	No. of times below standard.	No. of Tests.	Highest	Lowest.	Average
	Candles.	Candles.	Candles.			Grains.	Grains.	Grains.
United Natural Gas Co., St. Catharines—								
April								
May								
June								
July								
August								
September								
October								
November								
December								
January								
February								
March								
Ontario Pipe Line Co., Hamilton—								
April								
May								
June								
July								
August								
September								
October								
November								
December								
January								
February								
March								
Sterling Gas Co.—								
April								
May								
June								
July								
August								
September								
October								
November								
December								
January								
February								
March								

SESSIONAL PAPER No. 13

F—*Continued.*

Inspected during the Year ended March 31, 1910.

Cubic Feet. 35 Grains.		Ammonia per 100 Cubic Feet. Allowance—4 Grains.					Sulphuretted Hydrogen.			Remarks.
No. of times in excess of allowance.	No. of Tests.	Highest.	Lowest.	Average.	Times in excess of allowance.	No. of Tests.	No. of times absent.	No. of times present.	No. of Tests.	
		Grains.	Grains.	Grains.						
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	
							4	0	4	
							4	0	4	
							5	0	5	
							4	0	4	
							4	0	4	
							5	0	5	
							4	0	4	
							4	0	4	
							5	0	5	
							4	0	4	
							4	0	4	
							5	0	5	
							52	0	52	
							0	1	1	
							0	1	1	
							0	1	1	
							0	1	1	
							0	1	1	
							0	1	1	
							0	6	6	

APPENDIX

Return of the Illuminating Power and Purity of Gas

Inspection Office.	Illuminating Power. Standard. 16 Candles.					Sulphur per 100 Allowance—		
	Highest.	Lowest.	Average.	No. of times below standard.	No. of Tests.	Highest	Lowest.	Average
	Candles.	Candles.	Candles.			Grains.	Grains.	Grains.
Corp. of the City of Kingston—								
April	20·00	19·80	19·90	0	2			
May	20·00	19·80	19·90	0	4			
June	20·20	20·20	20·20	0	2			
July	20·60	20·00	20·20	0	3			
August	21·40	21·00	21·20	0	2			
September	22·00	21·00	21·40	0	3			
October	22·00	20·00	21·00	0	2			
November	22·00	20·00	21·20	0	4			
December								
January			21·00	0	1			
February			20·00	0	1			
March	21·00	20·00	20·50	0	2			
				0	26			
Listowel Gas Co.—								
April			18·38	0	1			
May			19·40	0	1			
June			19·02	0	1			
July			19·84	0	1			
August			18·26	0	1			
September			16·92	0	1			
October			17·72	0	1			
November			18·48	0	1			
December			17·20	0	1			
January			18·36	0	1			
February			19·70	0	1			
March			18·60	0	1			
				0	12			
London City Gas Co.—								
April	19·12	16·13	17·63	0	8			
May	20·53	14·96	16·99	2	10			
June	21·08	16·56	17·77	0	8			
July	17·48	16·21	16·86	0	10			
August	18·23	15·84	16·93	1	8			
September	18·91	15·94	17·61	1	8			
October	18·52	16·43	17·36	0	10			
November	17·88	16·04	16·61	0	8			
December	17·13	16·13	16·65	0	8			
January	17·74	16·61	17·07	0	10			
February	18·30	16·22	17·55	0	9			
March	18·19	16·54	17·33	0	8			
				4	105			

SESSIONAL PAPER No. 13

F—*Continued.*

Inspected during the Year ended March 31, 1910.

Cubic Feet. 35 Grains.		Ammonia per 100 Cubic Feet. Allowance—4 Grains.					Sulphuretted Hydrogen.			Remarks.
No. of times in excess of allowance.	No. of Tests.	Highest.	Lowest.	Average.	Times in excess of allowance.	No. of Tests.	No. of times absent.	No. of times present.	No. of times.	
		Grains.	Grains.	Grains.						
							2	0	2	
							4	0	4	
							2	0	2	
							3	0	3	
							2	0	2	
							3	0	3	
							2	0	2	
							4	0	4	
										No tests made in December.
							0	1	1	
							1	0	1	
							2	0	2	
							25	1	26	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	
							8	0	8	
							10	0	10	
							8	0	8	
							10	0	10	
							8	0	8	
							8	0	8	
							10	0	10	
							8	0	8	
							8	0	8	
							10	0	10	
							9	0	9	
							8	0	8	
							105	0	105	

APPENDIX

Return of the Illuminating Power and Purity of Gas

Inspection Office.	Illuminating Power.—Standard. 16 Candles.					Sulphur per 100 Allowance—		
	Highest.	Lowest.	Average.	No. of times below standard.	No. of tests.	Highest	Lowest.	Average
	Candles.	Candles.	Candles.			Grains.	Grains.	Grains.
Chatham Gas Co.—								
April								
May								
June								
July								
August								
September								
October								
November								
December								
January								
February								
March								
Ingersoll Gas Co.—								
April			19·70	0	1			
May			15·02	1	1			
June			16·28	0	1			
July			17·56	0	1			
August			16·11	0	1			
September			16·75	0	1			
October			12·66	0	1			
November			17·15	0	1			
December			15·34	1	1			
January			13·92	1	1			
February			16·88	0	1			
March			16·89	0	1			
				3	12			
City of St. Thomas—								
April			18·76	0	1			
May			17·82	0	1			
June			16·80	0	1			
July			16·91	0	1			
August			16·30	0	1			
September			18·40	0	1			
October			16·65	0	1			
November			17·68	0	1			
December			20·39	9	1			
January			19·38	0	1			
February			17·50	0	1			
March			19·35	0	1			
				0	12			

SESSIONAL PAPER No. 13

F—*Continued.*

Inspected during the Year ended March 31, 1910.

Cubic Feet. 35 Grains.		Ammonia per 100 Cubic Feet. Allowance—4 Grains.					Sulphuretted Hydrogen.			Remarks.
No. of times in excess of allowance.	No. of tests	Highest.	Lowest.	Average.	Times in excess of allowance.	No. of tests.	No. of times absent.	No. of times present.	No. of tests.	
		Grains.	Grains.	Grains.						
							0	2	2	
							0	2	2	
							1	1	2	
							2	0	2	
							1	0	1	
							1	0	1	
							0	1	1	
							0	1	1	
							0	1	1	
							0	1	1	
							0	1	1	
							0	2	2	
							5	12	17	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	

APPENDIX

Return of the Illuminating Power and Purity of Gas

Inspection Office.	Illuminating Power.—Standard. 16 Candles.					Sulphur per 100 Allowance—		
	Highest.	Lowest.	Average.	No. of times below standard.	No. of Tests.	Highest	Lowest.	Average
	Candles.	Candles.	Candles.			Grains.	Grains.	Grains.
Windsor Gas Co.—								
April	16·29	15·76	16·02	1	2			
May	13·90	13·65	13·77	2	2			
June	16·68	15·30	15·99	1	2			
July	17·56	16·54	17·05	0	2			
August			15·69	1	1			
September			18·06	0	1			
October			17·84	0	1			
November								
December								
January								
February								
March								
				5	11			
Napanee Gas Co.—								
April			22·53	0	1			
May			22·78	0	1			
June			21·18	0	1			
July	21·83	21·21	21·52	0	2			
August			20·39	0	1			
September			20·87	0	1			
October			21·86	0	1			
November			20·57	0	1			
December			20·52	0	1			
January			19·50	0	1			
February			17·86	0	1			
March			19·19	0	1			
				0	13			
Ottawa Gas Co.—								
April	16·56	16·23	16·44	0	8	15·15	14·71	14·93
May	16·66	15·39	16·48	0	8	14·54	14·36	14·45
June	16·97	16·06	16·52	0	10	14·59	14·47	14·53
July	16·85	16·23	16·56	0	8	14·95	14·64	14·79
August	16·81	16·35	16·51	0	8	14·81	14·47	14·64
September	16·73	16·37	16·48	0	10	14·85	14·38	14·61
October	16·65	16·27	16·44	0	8	14·59	14·37	14·48
November	16·76	16·29	16·50	0	8	14·76	14·61	14·68
December	16·97	16·06	16·43	0	10	14·71	14·36	14·53
January	16·61	16·23	16·40	0	8	14·92	14·11	14·51
February	16·79	16·32	16·53	0	8	14·66	14·39	14·52
March	16·85	16·46	16·60	0	10	14·60	14·31	14·45
				0	104			

SESSIONAL PAPER No. 13

F—*Continued.*

Inspected during the Year ended March 31, 1909—*Continued.*

Cubic Feet. 35 Grains.		Ammonia per 100 Cubic Feet. Allowance—4 Grains.					Sulphuretted Hydrogen.			Remarks.
No. of times in excess of allowance.	No. of Tests.	Highest.	Lowest.	Average.	Times in excess of allowance.	No. of Tests.	No. of times absent.	No. of times present.	No. of Tests.	
		Grains.	Grains.	Grains.						
.....	.....	.....	.....	.....	.....	.....	2	0	2	
.....	.....	.....	.....	.....	.....	.....	2	0	2	
.....	.....	.....	.....	.....	.....	.....	2	0	2	
.....	.....	.....	.....	.....	.....	.....	2	0	2	
.....	.....	.....	.....	.....	.....	.....	1	0	1	
.....	.....	.....	.....	.....	.....	.....	1	0	1	
.....	.....	.....	.....	.....	.....	.....	1	0	1	
.....	.....	.....	.....	.....	.....	.....	0	2	2	From this month this Company supplies natural gas only.
.....	.....	.....	.....	.....	.....	.....	0	3	3	
.....	.....	.....	.....	.....	.....	.....	0	1	1	
.....	.....	.....	.....	.....	.....	.....	1	0	1	
.....	.....	.....	.....	.....	.....	.....	1	1	2	
							13	7	20	
.....	.....	.....	.....	.....	.....	.....	1	0	1	
.....	.....	.....	.....	.....	.....	.....	1	0	1	
.....	.....	.....	.....	.....	.....	.....	1	0	1	
.....	.....	.....	.....	.....	.....	.....	2	0	2	
.....	.....	.....	.....	.....	.....	.....	1	0	1	
.....	.....	.....	.....	.....	.....	.....	1	0	1	
.....	.....	.....	.....	.....	.....	.....	1	0	1	
.....	.....	.....	.....	.....	.....	.....	0	1	1	
.....	.....	.....	.....	.....	.....	.....	0	1	1	
.....	.....	.....	.....	.....	.....	.....	1	0	1	
.....	.....	.....	.....	.....	.....	.....	0	1	1	
.....	.....	.....	.....	.....	.....	.....	1	0	1	
							10	3	13	
0	2	2·23	2·17	2·20	0	2	8	0	8	
0	2	2·17	1·21	1·69	0	2	8	0	8	
0	2	2·01	1·77	1·89	0	2	10	0	10	
0	2	2·27	2·19	2·23	0	2	8	0	8	
0	2	2·20	1·95	2·07	0	2	8	0	8	
0	2	2·20	2·14	2·17	0	2	10	0	10	
0	2	1·18	0·20	0·69	0	2	8	0	8	
0	2	2·26	1·30	1·80	0	2	8	0	8	
0	2	2·20	1·48	1·84	0	2	10	0	10	
0	2	2·18	1·74	1·96	0	2	8	0	8	
0	2	2·27	1·77	2·02	0	2	8	0	8	
0	2	2·24	1·98	2·11	0	2	10	0	10	
0	24				0	24	104	0	104	

APPENDIX

Return of the Illuminating Power and Purity of Gas

Inspection Offices.	Illuminating Power—Standard, 16 Candles.					Sulphur per 100 Allowance—		
	Highest.	Lowest.	Average.	No. of times below standard.	No. of Tests.	Highest	Lowest.	Average
	Candles.	Candles.	Candles.			Grains.	Grains.	Grains.
Owen Sound Gas Co.—								
April			16·00	0	1			
May			16·08	0	1			
June			16·00	0	1			
July			16·30	0	1			
August			16·30	0	1			
September			16·30	0	1			
October			18·00	0	1			
November			17·75	0	1			
December			16·80	0	1			
January			16·70	0	1			
February			16·00	0	1			
March			16·20	0	1			
				0	12			
Peterboro—								
April	19·00	17·60	18·30	0	2			
May	18·20	17·40	17·80	0	2			
June	17·40	16·60	17·00	0	2			
July	18·40	18·10	18·25	0	2			
August	18·00	17·20	17·60	0	2			
September	18·00	17·80	17·90	0	2			
October	18·40	17·20	17·80	0	2			
November	17·60	16·80	17·20	0	2			
December	17·20	16·70	16·95	0	2			
January	17·80	17·00	17·40	0	2			
February	17·60	17·20	17·40	0	2			
March	18·00	16·40	17·20	0	2			
				0	24			
Sarnia—								
April			17·94	0	1			
May			18·26	0	1			
June			18·10	0	1			
July			19·66	0	1			
August			18·80	0	1			
September			19·14	0	1			
October			18·94	0	1			
November			16·64	0	1			
December			16·68	0	1			
January								
February								
March								
				0	9			

SESSIONAL PAPER No. 13

F—*Continued.*

Inspected during the Year ended March 31, 1910—*Continued.*

Cubic Feet. 35 Grains.		Ammonia per 100 Cubic Feet. Allowance—4 Grains.					Sulphuretted Hydrogen.			Remarks.
No. of times in excess of allowance.	No. of Tests.	Highest.	Lowest.	Average.	Times in excess of allowance.	No. of Tests.	No. of times absent.	No. of times present.	No. of Tests.	
		Grains.	Grains.	Grains.						
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							2	0	2	
							1	1	2	
							23	1	24	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	Instruments out of repair.
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	

APPENDIX

Return of the Illuminating Power and Purety of Gas

Inspection Office.	Illuminating Power—Standard. 16 Candles.					Sulphur per 100 Allowance—		
	Highest.	Lowest.	Average.	No. of times below Standard.	No. of Tests.	Highest	Lowest.	Average
	Candles.	Candles.	Candles.			Grains.	Grains.	Grains.
Stratford—								
April			16·51	0	1			
May			17·60	0	1			
June			17·27	0	1			
July			16·80	0	1			
August			17·04	0	1			
September			16·75	0	1			
October			17·71	0	1			
November			17·60	0	1			
December			16·66	0	1			
January			17·86	0	1			
February			16·78	0	1			
March			16·71	0	1			
				0	12			
Consumers' Gas Co., Toronto—								
April	18·73	18·08	18·43	0	8	16·79	8·50	12·64
May	19·85	18·00	18 80	0	9	13·89	8·43	11 16
June	20·78	19·08	20 01	0	9	11·21	9 83	10 52
July	20·79	18·23	19·70	0	9	14·26	11·32	12·79
August	19·63	17·56	18·87	0	9	14·07	11·18	12·62
September	19·91	17·84	18 56	0	8	13·97	12 07	13·02
October	20·08	18·20	19·12	0	9	16·84	8·45	12·64
November	19 30	18·10	18·62	0	9	9·66	8·35	9·00
December	19·20	18·24	18·57	0	9	13·75	8·43	11·09
January	18·18	16·09	17·23	0	8	9·84	8·34	9 09
February	18·92	16·35	18·18	0	8	13·92	11·11	12·51
March	18·58	16·36	18·16	0	9	11·22	8·29	9·75
				0	104			
Woodstock Gas Co.—								
April			17·05	0	1			
May			17·19	0	1			
June			16·51	0	1			
July			17·05	0	1			
August			17·09	0	1			
September			17·25	0	1			
October			16·93	0	1			
November			17 11	0	1			
December			17·09	0	1			
January			16·98	0	1			
February			17·00	0	1			
March			16·66	0	1			
				0	12			

SESSIONAL PAPER No. 13

F—*Continued.*

Inspected during the Year ended March 31, 1910—*Continued.*

Cubic Feet. 35 Grains.		Ammonia per 100 Cubic Feet. Allowance—4 Grains.					Sulphuretted Hydrogen.			Remarks.
No. of times in excess of allowance.	No. of Tests.	Highest.	Lowest.	Average.	Times in excess of allowance.	No. of Tests.	No. of times absent.	No. of times present.	No. of Tests.	
		Grains.	Grains.	Grains.						
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	
0	2	0·25	0·20	0·22	0	2	8	0	8	
0	2	0·75	0·51	0·63	0	2	9	0	9	
0	2	0·27	0·25	0·26	0	2	9	0	9	
0	2	0·15	0·12	0·13	0	2	9	0	9	
0	2	0·10	0·00	0·05	0	2	9	0	9	
0	2	0·15	0·12	0·13	0	2	8	0	8	
0	2	0·20	0·00	0·10	0	2	9	0	9	
0	2	0·15	0·12	0·13	0	2	9	0	9	
0	2	0·17	0·15	0·16	0	2	9	0	9	
0	2	0·15	0·00	0·07	0	2	8	0	8	
0	2	0·25	0·12	0·18	0	2	8	0	8	
0	2	0·12	0·11	0·11	0	2	9	0	9	
0	24				0	24	104	0	104	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	

APPENDIX

Return of the Illuminating Power and Purity of Gas

Inspection Office.	Illuminating Power.—Standard. 16 Candles.					Sulphur per 100 Allowance—		
	Highest.	Lowest.	Average.	No. of times below standard.	No. of test.	Highest	Lowest	Average
	Candles.	Candles.	Candles.			Grains.	Grains.	Grains.
Montreal L., H. & P. Co. —								
April	17·56	16·02	16·32	0	9	2·21	2·18	2·19
May	18·10	16·02	16·85	0	8	2·28	2·11	2·19
June	16·40	16·00	16·16	0	9	3·10	2·40	2·75
July	16·88	16·04	16·32	0	9	2·85	1·95	2·40
August	16·42	16·05	16·25	0	9	2·55	1·97	2·26
September	16·96	16·10	16·29	0	8	2·76	1·81	2·28
October	16·52	16·08	16·17	0	9	1·11	1·09	1·10
November	16·12	16·00	16·27	0	9	2·34	2·17	2·25
December	16·18	16·00	16·11	0	9	2·75	2·63	2·69
January	16·22	16·00	16·09	0	8	6·12	4·76	5·44
February	16·10	16·00	16·05	0	8	2·84	2·47	2·65
March	16·23	16·03	16·10	0	9	4·22	2·90	3·56
				0	104			
Quebec Gas Co.—								
April			17·62	0	1	17·05	14·71	15·88
May			17·18	0	1	21·07	14·29	17·68
June			17·00	0	1	18·31	16·92	17·61
July			17·18	0	1	21·00	18·32	19·66
August			17·16	0	1	15.76	15·32	15·54
September			16·95	0	1	20·53	16·69	18·61
October			16·81	0	1	18·15	14·93	16·54
November			16·88	0	1	17·78	16·31	17·04
December			17·08	0	1	20·56	15·33	17·94
January			17·76	0	1	18·41	14·29	16·55
February			17.13	0	1	24·41	17·24	20·82
March			17·09	0	1	17·16	17·06	17·11
				0	12			
Sherbrooke—								
April			16·73	0	1			
May			20·36	0	1			
June			21·34	0	1			
July			22·45	0	1			
August			22·77	0	1			
September			23·25	0	1			
October			23·25	0	1			
November			26·28	0	1			
December			25·31	0	1			
January			28·53	0	1			
February			23·59	0	1			
March			23·59	0	1			
				0	12			

SESSIONAL PAPER No. 13

F—*Continued.*

Inspected during the Year ended March 31, 1909—*Continued.*

Cubic Feet. 35 Grains.		Ammonia per 100 Cubic Feet. Allowance—4 Grains.					Sulphuretted Hydrogen.			Remarks.
No. of times in excess of allowance.	No. of tests.	Highest.	Lowest.	Average.	Times in excess of allowance.	No. of tests.	No. of times absent.	No. of times present.	No. of tests.	
		Grains.	Grains.	Grains.						
0	2			0·00	0	2	14	0	14	
0	2			0·00	0	2	12	0	12	
0	2			0·00	0	2	14	0	14	
0	2			0·00	0	2	14	0	14	
0	2			0·00	0	2	14	0	14	
0	2			0·00	0	2	12	0	12	
0	2			0·00	0	2	14	0	14	
0	2			0·00	0	2	14	0	14	
0	2			0·00	0	2	14	0	14	
0	2			0·00	0	2	12	0	12	
0	2			0·00	0	2	12	0	12	
0	2			0·00	0	2	14	0	14	
0	24				0	24	160	0	160	
0	2				0	2	2	0	2	
0	2				0	2	2	0	2	
0	2				0	2	2	0	2	
0	2				0	2	2	0	2	
0	2				0	2	2	0	2	
0	2				0	2	2	0	2	
0	2				0	2	2	0	2	
0	2				0	2	2	0	2	
0	2				0	2	2	0	2	
0	2				0	2	2	0	2	
0	2				0	2	2	0	2	
0	2				0	2	2	0	2	
0	24				0	24	24	0	24	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							0	1	1	
							1	0	1	
							0	1	1	
							0	1	1	
							0	1	1	
							1	0	1	
							1	0	1	
							8	4	12	

APPENDIX

Return of the Illuminating Power and Purity of Gas

Inspection Office.	Illuminating Power.—Standard. 16 Candles.					Sulphur per 100 Allowance		
	Highest.	Lowest.	Average.	No. of times below standard.	No. of tests.	Highest	Lowest.	Average
	Candles.	Candles.	Candles			Grains.	Grains.	Grains.
La Cie du Gaz, etc., St. Hyacinthe—								
April			18·24	0	1			
May			18·32	0	1			
June			18·42	0	1			
July			18·74	0	1			
August			13·34	0	1			
September			18·46	0	1			
October			18·62	0	1			
November			18·38	0	1			
December			18·54	0	1			
January			18·72	0	1			
February			18·34	0	1			
March			18·46	0	1			
				0	12			
Fredericton Gas Co.								
April								
May								
June								
July								
August			17·44	0	1			
September			16·79	0	1			
October			16·42	0	1			
November			16·17	0	1			
December			16·87	0	1			
January			17·61	0	1			
February			16·31	0	1			
March			16·75	0	1			
				0	8			
Saint John Railway—								
April	17·04	16·83	16·93	0	2			20·70
May	18·14	17·26	17·70	0	2			24·93
June	17·19	16·96	17·07	0	2			22·51
July	17·08	17·03	17·05	0	2			23·40
August	17·58	17·01	17·29	0	2			20·15
September	17·08	16·69	16·88	0	2			21·64
October	17·18	17·12	17·15	0	2			23·80
November	17·55	16·82	17·18	0	2			18·39
December	18·27	17·02	17·64	0	2			17·13
January	17·77	17·61	17·70	0	2			22·33
February	17·31	17·18	17·24	0	2			21·05
March	17·95	17·16	17·55	0	2			19·64
				0	24			

SESSIONAL PAPER No. 13

F—*Continued.*

Inspected during the Year ended March 31, 1910.

Cubic Feet. 35 Grains.		Ammonia per 100 Cubic Feet. Allowance—4 Grains.					Sulphuretted Hydrogen.			Remarks.
No. of times in excess of allowance.	No. of tests.	Highest.	Lowest.	Average.	Times in excess of allowance.	No. of tests.	No. of times absent.	No. of times present.	No. of tests.	
		Grains.	Grains.	Grains.						
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	
										No test made. Instruments sent for repairs.
										" " "
										" " "
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							8	0	8	
0	1			0·00	0	1	2	0	2	
0	1			0·00	0	1	2	0	2	
0	1			0·00	0	1	2	0	2	
0	1			0·00	0	1	2	0	2	
0	1			0·00	0	1	2	0	2	
0	1			0·00	0	1	2	0	2	
0	1			0·00	0	1	2	0	2	
0	1			0·00	0	1	2	0	2	
0	1			0·00	0	1	2	0	2	
0	1			0·00	0	1	2	0	2	
0	1			0·00	0	1	2	0	2	
0	12				0	12	24	0	24	

APPENDIX

Return of the Illuminating Power and Purity of Gas

Inspection Office.	Illuminating Power—Standard. 16 Candles.					Sulpher per 100 Allowance—		
	Highest.	Lowest.	Average.	No. of times below standard.	No. of Tests.	Highest	Lowest.	Average
	Candles.	Candles.	Candles.			Grains.	Grains.	Grains.
Moncton—								
April			18·78	0	1			
May			18·47	0	1			
June			18·85	0	1			
July			19·88	0	1			
August			18·92	0	1			
September			18·64	0	1			
October			18·69	0	1			
November			18·29	0	1			
December			19·78	0	1			
January			19·43	0	1			
February			18·66	0	1			
March			19·14	0	1			
				0	12			
Halifax Electric Tramway, &c.—								
April			18·83	0	1			16·42
May			17·64	0	1			23.04
June			16·90	0	1			32·24
July			17·64	0	1			19·45
August			16·72	0	1			17·23
September			17·10	0	1			26·70
October			19·39	0	1			17·42
November			17.14	0	1			20·00
December			18·63	0	1			29·11
January			17·11	0	1			25·29
February			17·63	0	1			23·86
March			18·73	0	1			27·60
				0	12			
Yarmouth Gas Co—								
April			16·04	0	1			
May			17·11	0	1			
June			17·48	0	1			
July			17·24	0	1			
August			17·26	0	1			
September			16·48	0	1			
October			17·26	0	1			
November			16·57	0	1			
December			16·05	0	1			
January			16·39	0	1			
February			16·25	0	1			
March			16·38	0	1			
				0	12			

SESSIONAL PAPER No. 13

F.—*Continued.*

Inspected during the Year ended March 31, 1910.

Cubic Feet, 35 grains.		Ammonia per 100 Cubic Feet. Allowance—4 Grains.					Sulphuretted Hadrogen.			Remarks.
No. of times in excess of allowance.	No. of Tests.	Highest.	Lowest.	Average.	Times in excess of allowance.	No. of Tests.	No. of times absent.	No. of times present.	No. of tests.	
		Grains.	Grains.	Grains.						
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	
0	1						1	0	1	
0	1						1	0	1	
0	1						1	0	1	
0	1						1	0	1	
0	1						1	0	1	
0	1						1	0	1	
0	1						1	0	1	
0	1						1	0	1	
0	1						1	0	1	
0	1						1	0	1	
0	1						1	0	1	
0	12						12	0	12	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	

APPENDIX

Return of the Illuminating Power and Purity of Gas

Inspection Office.	Illuminating Power—Standard, 16 Candles.					Sulphur per 100 Allowance—		
	Highest.	Lowest.	Average.	No. of times below standard.	No. of tests.	Highest	Lowest.	Average
	Candles.	Candles.	Candles.			Grains.	Grains.	Grains.
Ch'. Light & Power Co—								
April	18·16	16·34	17·43	0	3			
May	19·16	18·34	18·75	0	2			
June			17·82	0	1			
July			16·75	0	1			
August			17·64	0	1			
September			18·80	0	1			
October			18·82	0	1			
November			20·30	0	1			
December			18·37	0	1			
January			18·24	0	1			
February			20·15	0	1			
March			22·32	0	1			
				0	15			
Winnipeg El. Light Co.—								
April	17·42	16·57	17·03	0	0			
May	18·12	16·02	17·43	0	9			
June	17·85	16 37	17·17	0	9			
July	17·42	16·84	17·15	0	9			
August	17·00	16·00	16·39	0	9			
September	16·30	15·90	16·07	2	8			
October	16·20	15 80	15·99	3	9			
November	16·05	15·90	16·00	1	8			
December	16·10	15·80	15 99	3	10			
January	16·00	15 80	15·91	7	8			
February	3·00	3·00	3·00	8	8			
March	3·00	3·00	3 00	8	8			
				32	101			
Nanaimo Gas and Power Co.								
April			16·90	0	1			
May			17·40	0	1			
June			19 14	0	1			
July			19·15	0	1			
August			17·70	0	1			
September			19·08	0	1			
October			19·72	0	1			
November			19·70	0	1			
December			18·17	0	1			
January			17·04	0	1			
February			16·45	0	1			
March			18·80	0	1			
				0	12			

SESSIONAL PAPER No. 13

F—*Continued.*

Inspected during the Fiscal Year ended March 31, 1910.

Cubic Feet. 35 Grains.		Ammonia per 100 Cubic Feet. Allowance—4 Grains.					Sulphuretted Hydrogen.			Remarks.
No. of times in excess of allowance.	No. of tests.	Highest.	Lowest.	Average.	Times in excess of allowance.	No. of tests.	No. of times absent.	No. of times present.	No. of tests.	
		Grains	Grains.	Grains.						
							1	2	3	
							2	0	2	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							13	2	15	
							9	0	9	
							9	0	9	
							9	0	9	
							9	0	9	
							9	0	9	
							8	0	8	
							9	0	9	
							8	0	8	
							10	0	10	
							8	0	8	
							8	0	8	
							8	0	8	
							104	0	104	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	

APPENDIX

Return of the Illuminating Power and Purity of Gas

Inspection Office.	Illuminating Power—Standard. 16 Candles.					Sulphur per 100 Allowance—		
	Highest.	Lowest.	Average.	No. of times below Standard.	No. of tests.	Highest	Lowest.	Average
	Candles.	Candles.	Candles.			Grains.	Grains.	Grains.
New Westminster Gas Co.—								
April			18·97	0	1			
May			18·75	0	1			
June			18·84	0	1			
July			19·03	0	1			
August			19·11	0	1			
September			18·79	0	1			
October			18·79	0	1			
November			19·02	0	1			
December			18·84	0	1			
January			18·73	0	1			
February			19·05	0	1			
March			18·91	0	1			
				0	12			
Vancouver Gas Co.—								
April	16·80	16·00	16·38	0	8			
May	17·00	16·00	16·54	0	10			
June	17·00	16·20	16·47	0	8			
July	16·80	16·00	16·38	0	10			
August								
September	11·70	10·10	10·82	4	4			
October	15·73	10·10	12·87	10	10			
November	13·77	10·62	12·07	8	8			
December	15·18	9·12	12·08	10	10			
January	12·97	8·75	10·49	8	8			
February	11·40	8.30	10·48	8	8			
March	11·80	8·15	10·19	8	8			
				56	92			
Victoria Gas Co.—								
April			16·38	0	1			
May			16·43	0	1			
June			16·60	0	1			
July			16·47	0	1			
August			16·60	0	1			
September								
October			16·24	0	1			
November			16·75	0	1			
December			17·12	0	1			
January			17·38	0	1			
February			16·62	0	1			
March			16·80	0	1			
				0	11			

Inland Revenue Department,
Ottawa, June 9, 1910.

SESSIONAL PAPER No. 13

F—*Concluded.*

Inspected during the year ended March 31, 1910.

Cubic Feet. 35 Grains.		Ammonia per 100 Cubic Feet. Allowance—4 Grains.					Sulphuretted Hydrogen.			Remarks.
No. of times in excess of allowance.	No. of tests.	Highest.	Lowest.	Average.	Times in excess of allowance.	No. of tests.	No. of times absent.	No. of times present.	No. of tests.	
		Grains.	Grains.	Grains.						
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							12	0	12	
							8	0	8	
							10	0	10	
							8	0	8	
							10	0	10	
							4	0	4	
							10	0	10	
							8	0	8	
							9	1	10	
							8	0	8	
							8	0	8	
							8	0	8	
							91	1	92	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							1	0	1	
							11	0	11	

W. J. GERALD,
Deputy Minister.

APPENDIX G.

STATEMENT of Gas Meters for Verification, Verified after first Rejection and Rejected for the year ended March 31, 1910.

	Presented for Verification.	Kind.		Verified as coming within the error tolerated by law.			Verified after first Rejection.			Rejected.			Totals Verified and Rejected.	
		Wet.	Dry.	Correct.	Fast.	Slow.	Correct.	Fast.	Slow.	Unsound.	Fast.	Slow.	Verified.	Rejected.
Barrie	100		100	5	33	62							100	
Belleville	147		147	35	24	86						2	145	2
Berlin	397		397	3	62	321					7	4	386	11
Brockville	307		307	199	61	45		2					307	
Cobourg	96		96	13	38	45							96	
Cornwall	11		11	11									11	
Guelph	332		332		76	245		2	2	1	5	1	325	7
Hamilton	5,102		5,102	978	706	3,411					7		5,095	7
Kingston	733		733	500	129	104							733	
Listowel	10		10	4	2	4							10	
London	6,785		6,785	1,664	1,739	3,358					17	7	6,761	24
Napanee	29		29	7	5	17							29	
Ottawa	1,095		1,095	216	362	514					3		1,092	3
Owen Sound	145		145	129		16							145	
Peterborough	230		230	78	5	139				1	1	6	222	8
Sarnia	780		780	565	12	198				3	1	1	775	5
Stratford	87		87	19	17	50		1					87	
Toronto	16,813		16,813	4,007	4,307	8,322					146	31	16,636	177
Woodstock	352		352	50	142	160							352	
Montreal	17,018		17,018	2,154	4,503	10,199				91	28	43	16,856	162
Quebec	646		646	270	109	267							646	
Sherbrooke	71		71	39	18	14							71	
St. Hyacinthe	32		32	20	4	8							32	
Fredericton	2		2			2							2	
St. John	373		373	210	4	159							373	
Halifax	193		193	180		12				1			192	1
Charlottetown	45		45	6	8	22				6	2	1	36	9
Winnipeg	1,757		1,757	497	122	1,138							1,757	
Nanaimo	66		66	66									66	
New Westminster	85		85	27	22	36							85	
Vancouver	2,181		2,181	374	193	1,614							2,181	
Victoria	382		382	97	75	210							382	
Total	56,402		56,402	12,423	12,778	30,778		5	2	103	217	96	55,986	416

W. J. GERALD,
Deputy Minister.

INLAND REVENUE DEPARTMENT,
OTTAWA, June 9, 1910.

APPENDIX H.

STATEMENT of Electric Light Inspection Expenditures and Revenues for the Fiscal Year ended March 31, 1910.

Districts.	Inspectors.	Expenditures.						Revenues.
		Salaries.	Special Assistance	Rent.	Travelling Expenses.	Sundries.	Total.	
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Belleville	Fraser, Harold	833 30			480 91	9 38	1,323 59	1,160 50
Hamilton	McPhie, D.				146 45	27 30	173 75	2,179 00
London	Nash, A. F				210 80	9 25	220 05	1,382 50
Ottawa	Roche, H. G				450 05		450 05	3,940 50
Toronto	Johnstone, J. K.		1,599 84		976 60	236 45	2,812 89	7,698 50
	Ontario	833 30	1,599 84		2,264 81	282 38	4,980 33	16,361 00
Montreal	Aubin, A.		771 03		30 15	14 79	815 97	6,366 00
Quebec	Le Vasseur, N.				39 26	85 12	124 38	685 50
Sherbrooke	Simpson, A. F.					91 30	91 30	722 25
St. Hyacinthe	Provost, J. E.	300 00			143 80	3 30	447 10	262 25
Three Rivers	Robitaille, G.W.	500 00		120 00	51 90	7 17	679 07	151 50
	Quebec	800 00	771 03	120 00	265 11	201 68	2,157 82	8,187 50
St. John, N.B.	Wilson, J. E.				218 90	9 05	227 95	1,622 50
Halifax, N.S.	Cotter, W. F.				243 25	2 90	246 15	1,469 25
Charlottetown, P.E.I	Bell, J. H				22 10	64 77	86 87	167 25
Winnipeg, Man	Magness, R.		308 32		216 25	18 90	543 47	5,096 25
	Hamilton, R.							
Edmonton, Alta	Stott, Jas.	916 65	548 39	525 00	610 20	135 31	2,735 55	4,284 75
	Rowe, E. A.							
Regina, Sask.	Reesor, M. W.					18 71	18 71	
Vancouver, B.C	Miller, J. E.	2,124 96				95 04	2,220 00	7,543 75
	Stott, Jas.							
Victoria, B.C.	Jones, R.				31 35	34 60	65 95	1,583 75
	British Columbia					129 64	2,285 95	9,127 50
Yukon	Macdonald, J.F.	500 00					500 00	
Chief Electrical Engineer					545 04	755 05	1,300 09	
General Contingencies						3,670 40	3,670 40	
Printing						49 47	49 47	
Stationery						77 83	77 83	
	Grand Totals.	5,174 91	3,227 58	645 00	4,417 01	5,416 09	18,880 59	46,316 00

INLAND REVENUE DEPARTMENT,
OTTAWA, June 9, 1910.

W. J. GERALD,
Deputy Minister.

APPENDIX I.

STATEMENT showing the Number of Electric Meters Verified, Rejected and Verified after first rejection for the Fiscal Year ended March 31, 1910.

Districts.	Presented for Verification.	Verified as coming within the error tolerated by law.			Rejected.			Verified after first Rejection.			Totals.	
		Correct.	Fast.	Slow.	Unsound.	Fast.	Slow.	Correct.	Fast.	Slow.	Verified.	Rejected.
Belleville	1,207	801	221	184	....	1	....	....	....	....	1,207	....
Hamilton	2,161	694	410	1,057	....	....	....	....	....	....	2,161	....
London	1,413	695	375	338	....	2	3	....	....	....	1,408	5
Ottawa	4,960	1,161	2,462	1,335	....	1	1	....	....	....	4,958	2
Toronto	7,222	3,114	2,557	1,538	....	7	6	....	....	....	7,209	13
Montreal	7,003	3,187	2,530	1,282	....	4	....	....	....	....	6,999	4
Quebec	824	523	175	126	....	....	....	....	....	....	824	....
Sherbrooke	830	299	208	314	....	....	9	....	....	....	821	9
St. Hyacinthe	329	75	165	89	....	....	....	....	....	....	329	....
Three Rivers	179	113	34	32	....	....	....	....	....	....	179	....
St. John	1,377	685	396	293	....	1	1	....	....	1	1,375	2
Halifax	1,682	1,625	33	14	7	....	4	....	....	....	1,671	11
Charlottetown	170	63	68	39	....	....	....	....	....	....	170	....
Winnipeg	5,229	3,247	634	1,348	....	....	....	....	....	....	5,229	....
Edmonton	5,013	1,477	1,969	1,567	....	....	....	....	....	....	5,013	....
Vancouver	8,059	1,684	3,540	2,835	....	....	....	....	....	....	8,059	....
Victoria	1,867	908	602	357	....	....	....	....	....	....	1,867	....
Totals	49,525	20,351	16,378	12,748	7	16	24	....	....	1	49,479	46

W. J. GERALD,
Deputy Minister.

DEPARTMENT OF INLAND REVENUE,
OTTAWA, June 9, 1910.

APPENDIX J.

STATEMENT showing the Electric Light Companies registered under the Electric Light Inspection Act during the year ended March 31, 1910.

Districts.	Name of Company.	Serial Number.	By Whom Certificate Issued.	Certificate for Fiscal Year.	Number of Lamps.		
					Arc.	Incandescent.	Totals.
Belleville	Tweed Electric Light and Power Company	1	C.I.R., Belleville	1909-10	5	1,500	1,550
	The Corporation of Picton	2	"	"	41	6,500	6,910
	The Frankford Electric Light Co., Ltd	3	"	"		375	375
	W. P. Niles, Wellington	4	"	"	18	1,200	1,380
	Fair & Sargent, Bancroft	5	"	"		600	600
	The Trenton Electric and Water Co., Ltd	6	"	"	102	18,060	19,080
	The Corporation of Madoc	7	"	"	12	1,200	1,320
	Marmora Electric Light Co., Ltd	8	"	"		679	679
	St. Lawrence Power Co., Cornwall	1	C.I.R., Cornwall	1909-10	230	915	3,215
	Vankleek Hill Electric Co.	2	"	"	5	1,685	1,735
	The Hawesbury Electric Light and Power Co	3	"	"	4	2,372	2,412
	Corporation of Alexandria,	4	"	"		759	759
	Bishop & Co., Crysler	5	"	"		500	500
	Stormont Electric Light and Power Co., Cornwall	6	"	"	16	2,750	2,910
	School of Mining, Kingston	1	C.I.R., Kingston	1909-10	3	125	155
	The Light Department of the Corporation of the City of Kingston	2	"	"	150	8,900	10,400
	The Corporation of Napanee, Heat, Light and Power Co	3	"	"	40	2,500	2,900
	The Benjamin Manufacturing Co., Ltd., of the Village of Yarker	4	"	"		300	300
	A. A. Connoly, Yarker	5	"	"		125	125
	D. J. Galbraith, Newcastle	1	C.I.R., Peterborough	1909-10		450	450
	The Port Hope Electric Light and Power Co., Ltd	2	"	"	25	3,000	3,250
	The Havelock Electric Light Co., Ltd	3	"	"	13	1,000	1,130
	Light, Heat and Power Co., Lindsay	4	"	"			
	Bobcaygeon Municipal Electric Light Commission	5	"	"	22	1,000	1,220
	Colborne Electric Light Co	6	"	"		1,000	1,000
	Bowmanville Electric Light Co	7	"	"	17	1,200	1,370
	Light and Power Co., Peterborough	8	"	"	250	34,000	36,500
	Brighton Electric Plant	9	"	"		628	628
	The Corporation of the Town of Campbellford	10	"	"	37	2,564	2,934
	Cobourg Utilities Corporation, Ltd	11	"	"	30	2,500	2,800
	W. C. Harrison, Norwood	12	"	"	13	700	850
	The Board of Water, Light and Power Commission, Fenelon Falls	13	"	"	14	1,600	1,740
	Fowlds Co., Ltd., Hastings	14	"	"	13	650	780

APPENDIX J.—*Continued.*

STATEMENT showing the Electric Light Companies registered under the Electric Light Inspection Act during the year ended March 31, 1910.—*Continued.*

Districts.	Name of Company.	Serial Number.	By whom Certificate Issued.	Certificate for Fiscal Year.	Number of Lamps.		
					Arc.	Incandescent.	Totals.
Belleville	The Lakefield Electric Light Co.	15	C.I.R., Peterborough	1909-10	9	1,300	1,390
	Davidson & Harrington, Millbrook	16	"	"	5	500	550
	Otonabee Power Co., Peterborough	17	"	"	20	12,000	12,200
	Stephenson Bros., Omemee	18	"	"	.....	300	300
	Water and Light Commissioners, Prescott	1	C.I.R., Prescott	1909-10	10	4,000	4,100
	Village of Iroquois	2	"	"	15	1,032	1,183
	Kemptville Milling Co	3	"	"	.....	1,200	1,200
	Merrickville Electric Light and Power Co	4	"	"	1	499	500
	Westport Electric Light and Milling Co., Ltd	5	"	"	1	687	697
	Frank Elliott, Winchester	6	"	"	.....	500	500
	The Cardinal Electric Light Co	7	"	"	3	1,400	1,430
	Morrisburg Electric Light and Power Co	8	"	"	.....	3,500	3,500
	The Gananoque Electric Light and Water Supply Co., Ltd	9	"	"	25	1,500	1,750
	The Brockville Light and Power Department	10	"	"	99	7,000	7,990
Hamilton	The Simcoe Gas and Water Co	1	I.C.R., Brantford	1909-10	32	.....	320
	G. H. Noxal, Ember	2	"	"	.....	325	325
	Western Counties Electric Co., Brantford	3	"	"	300	27,000	30,000
	The Delhi Light and Power Co., Delhi	4	"	"	.....	1,250	1,250
	Herbert Webster, Norwich	5	"	"	.....	1,847	1,847
	Corporation of Paris	6	"	"	32	4,000	4,320
	The Brantford Street Railway Co	7	"	"	.....	150	150
	Woodstock Water and Light System	8	"	"	180	9,000	10,800
	Tilsonburg Electric Light Works	9	"	"	50	3,120	3,620
	J. G. Field, Tavistock	10	"	"	.....	750	750
	The Ingersoll Electric Power and Light Co., Ltd	11	"	"	47	3,304	3,774
	The Hamilton Cataract Power, Light and Traction Co., Ltd	1	C.I.R., Hamilton	1909-10	436	10,992	15,352
	The Hamilton Electric Light and Power Co	2	"	"	320	90,000	93,200
	The Dundas Electric Co	3	"	"	.....	3,598	3,598
	The Electric Power and Manufacturing Co., Hamilton	4	"	"	.....	200	200
	The Dunnville Electric Light Co., Ltd	1	C. I. R., St. Catharines	1909-10	13	2,000	2,130
	The Ontario Distributing Co., Ltd., Stanford	2	" "	"	.....	200	200
	The Maple Leaf Rubber Co., Ltd., Port Dalhousie	3	" "	"	16	1,225	1,385
	The Lincoln Electric Light and Power Co., St. Catharines	4	" "	"	150	20,000	21,500
	Corporation of the Town of Niagara Falls	5	" "	"	93	12,000	12,930

	Town of Niagara	6	"	"	"		2,000	2,000
	The Welland Electrical Co., Ltd.	7	"	"	"	1	2,500	2,510
	The Corporation of the Town of Thorold	8	"	"	"	28	1,900	2,180
	The Hamilton Cataract Light, Power and Traction Co., Ltd., Beamsville	9	"	"	"		1,266	1,266
	Grimsby Electric Plant	10					2,838	2,838
	The Merritton Municipal Electric Light and Power Plant	11	"	"	"	201	800	2,801
London	The Corporation of the Town of Strathroy	1	C. I. R., London		1909-10	19	4,200	4,390
	Watford Electric Light Co.	2	"	"	"	17	700	870
	City of St. Thomas Light, Heat and Power Department	3	"	"	"	100	6,000	7,000
	Walter Mitchell, Port Stanley	4	"	"	"		1,000	1,000
	Hamilton & Prout, Forest	5	"	"	"	18	800	980
	The Sarnia Gas and Electric Light Co.	6	"	"	"	135	6,000	7,350
	The Dutton Electric Light Co., Ltd.	7	"	"	"	5	995	1,045
	H. C. Baird, Son & Co., Ltd., Parkhill	8	"	"	"	12	1,350	1,470
	The Petrolea Electric Light, Heat and Power Co.	9	"	"	"	39	4,000	4,390
	Town of Aylmer Waterworks and Electric Light Department	10	"	"	"	16	2,500	2,660
	The Alvinston Power Co., Ltd.	11	"	"	"	13	500	630
	The West Lorne Electric Light Co., Ltd.	12	"	"	"	6	433	493
	The London Electric Co., Ltd.	13	"	"	"	413	46,156	50,286
	Helena Costume Co., Ltd., London	14	"	"	"		2,000	2,000
	Geo. Coultis, & Son, Thedford, Ont.	15	"	"	"		900	900
	Rock Glen Power Co., Ltd., Arkona	16	"	"	"	1	360	370
	Clinton Electric Light Co.	1	C. I. R., Stratford.		1909-10	26	2,000	2,260
	E. Livingstone, Blyth	2	"	"	"	7	400	470
	Corporation of the Town of Palmerston	3	"	"	"	24	1,500	1,740
	Snell & Znafle, Exeter	4	"	"	"	16	1,200	1,360
	The Town of Goderich	5	"	"	"	52	3,000	3,520
	Corporation of the Town of Mitchell	6	"	"	"	28	1,100	1,380
	Corporation of the Town of Wingham	7	"	"	"	25	4,000	4,250
	J. A. Williams & Co, Zurick	8	"	"	"		295	295
	Thos. Welsh, Hensall	9	"	"	"		900	900
	The Seaforth Electric Light, Heat and Power Co.	10	"	"	"	17	2,000	2,170
	Corporation of the Town of St. Mary's	11	"	"	"	70	5,000	5,700
	The Stratford Gas Co.	12	"	"	"	130	4,200	5,500
	John Patterson, Wroxeter	13	"	"	"		400	400
	Wm. J. Palmer, Brussels	14	"	"	"	9	500	590
	Hiram Walker & Sons, Walkerville	1	C. I. R., Windsor		1909-10	30	5,000	5,300
	Sandwich, Windsor and Amherstburg Railway Co., Windsor	2	"	"	"	6	17,000	17,660
	Kingsville Electric Light Co.	3	"	"	"		1,450	1,450
	The Corporation of the Town of Dresden	4	"	"	"	6	1,200	1,260
	The Corporation of the Village of Thamesville	5	"	"	"		800	800
	Leamington Light and Heat Co., Ltd	6	"	"	"	18	1,600	1,780
	Corporation of the Town of Bothwell	7	"	"	"	14	393	533
	Thomas C. Vickerman, Tilbury	8	"	"	"	15	1,000	1,150
	W. H. McMackon, Ridgetown	9	"	"	"	15	1,000	1,150
	The Chatham Gas Co., Ltd.	10	"	"	"	40	10,000	10,400
	The Amherstburg Electric Light, Heat and Power Co.	11	"	"	"		1,050	1,050
	C. E. Naylor, Essex	12	"	"	"	6	1,200	1,260

APPENDIX J—*Continued.*

STATEMENT showing the Electric Light Companies registered under the Electric Light Inspection Act during the year ended March 31, 1910—*Continued.*

Districts.	Name of Company.	Serial Number.	By Whom Certificate Issued.	Certificate for Fiscal Year.	Number of Lamps.		
					Arc.	Incandescent.	Totals.
London	The Corporation of the Town of Blenheim	13	C.I.R., Windsor	1909-10	17	1,400	1,570
	The Premier Electric Light and Power Co., Ltd., Wallaceburg	14	" "	"	31	1,720	2,030
	James A. Secord, Harrow	15	" "	"		600	600
	John Wigle, Windsor	16	" "	"		250	250
	The City of Windsor	17	" "	"	201	48	2,058
Ottawa	Ottawa Electric Light Co	1	C. I. R., Ottawa	"	785	189,759	197,609
	Corporation of the City of Ottawa	2	" "	"	821	63,251	71,461
	Albert McLaren, Buckingham	3	" "	"	40	2,900	3,300
	Deschenes Electric Light Co., Ottawa	4	" "	"		1,612	1,612
	Hull Electric Co., Aylmer and Hull	5	" "	"	63	10,219	10,849
	Corporation of the Town of Sudbury	1	C. I. R., Perth	1909-10	42	3,500	3,920
	The Canadian Copper Co	2	"	"	7	2,048	2,118
	The Arnprior Electric Light and Power Co	3	"	"		3,900	3,900
	The Sturgeon Falls Electric Light and Power Co	4	"	"	7	2,500	2,570
	The Canadian Electric and Water Co., Perth	5	"	"		6,000	6,000
	Smith's Falls Electric Power Co	6	"	"	60	5,000	5,600
	The Carleton Place Electric Light Co	7	"	"	8	2,800	2,880
	Corporation of the Town of Perth	8	"	"	56		560
	The Mattawa Electric Light and Power Co	9	"	"	14	975	915
	The Renfrew Power Co	10	"	"	56	3,500	4,060
	The Renfrew Electric Co	11	"	"		1,600	1,600
	The North Bay Light, Heat and Power Co	12	"	"	31	5,000	5,310
	John D. McRae, Eganville	13	"	"		500	500
	Citizen's Electric Co., Ltd., Smith's Falls	14	"	"		2,100	2,100
	The Pembroke Electric Light Co., Ltd	15	"	"	61	1,260	1,870
	Corporation of the Town of Almonte	16	"	"	16	3,000	3,160
	The Liskeard Light, Heat and Power Co., New Liskeard	17	"	"	19	13	203
	Dowd Milling Co., Pakenham	18	"	"		500	500
Toronto	Drayton Electric Light Co	1	C. I. R., Guelph	1909-10		525	525
	Board of Light and Heat Commissioners, Guelph	2	"	"	99	13,621	14,611
	Waterloo Electric Light and Power Co	3	"	"	29	4,000	4,290
	Fergus Electric Light Plant	4	"	"	37	2,000	2,370
	Ratz Bros., Elmira	5	"	"		700	700

John Howes, Harriston	6	"	"	18	800	980
Corporation of the Town of Hespeler	7	"	"	19	2,000	2,190
Corporation Town of Mount Forest	8	"	"	17	2,000	2,170
Galt Gas Light Co., Ltd	9	"	"	80	9,400	10,200
Berlin Light Commissioners	10	"	"	140	10,000	11,400
E. W. B. Linden, St. Jacobs	11	"	"		300	300
Jacob Morley, New Hamburgh	12	"	"	21	1,200	1,410
Saubla Falls Light and Power Co., Wiarton	1	C. I. R., Owen Sound	1909-10	28	1,800	2,080
The Corporation of the Village of Dundalk	2	"	"		500	500
The Georgian Bay Power Co., Ltd., Eugenia	3	"	"		364	364
The Teeswater Electric Light Co	4	"	"	12	500	620
Corporation of the Town of Kincardine	5	"	"	18	2,837	3,017
The Langan Electric Light and Power Co., Southampton	6	"	"		2,984	2,984
H. Grutzner, Hanover	7	"	"	17	1,948	2,118
The Wenger Milling Co., Aylton	8	"	"		150	150
The Walkerton Electric Light and Power Co	9	"	"	17	1,971	2,141
The Thomas Andrews Estate, Thornbury	10	"	"	11	650	760
The Georgian Bay Milling and Power Co., Ltd., Meaford	11	"	"	26	2,300	2,560
The Chesley Electric Light Co	12	"	"	30	1,400	1,700
Minnis Bros., Markdale	13	"	"		1,200	1,200
Walter Stewart and Son, Lucknow	14	"	"	13	400	530
H. Cargill and Son, Cargill	15	"	"		650	650
The Mildmay Electric Light Co	16	"	"		300	300
Corporation of the Town of Collingwood	17	"	"	65	9,000	9,650
Corporation of the Town of Owen Sound	18	"	"	83	15,892	16,722
Cratsford & McIntyre, Durham	19	"	"	6	1,000	1,060
The Paisley Electric Light Co	20	"	"		900	900
Toronto Electric Light Co	1	C. I. R., Toronto	1909-10	1,700	300,000	317,000
Georgetown Electric Light and Power Co	2	"	"	15	1,200	1,350
I. J. Gould, Uxbridge	3	"	"	12	1,150	1,270
Jos. Knox, Stayner	4	"	"		750	750
Corporation of Bracebridge	5	"	"	30	5,000	5,300
J. A. MacClennan and Co., Powassen	6	"	"		400	400
Corporation of Gravenhurst	7	"	"	4	3,000	3,040
John Philips, Grand Valley and Arthur	8	"	"		1,800	1,800
The Aurora Electric Light Co	9	"	"		600	600
Corporation of Huntsville	10	"	"	5	2,500	2,550
W. L. Summerfeldt, Sutton	11	"	"		425	425
Jas. Dobson, Beaverton	12	"	"		1,000	1,000
The Dufferin Light and Power Co., Ltd., Orangeville	13	"	"		2,500	2,500
Corporation Town of Whitby	14	"	"	29	4,000	4,290
Jonas Byers, Stouffville	15	"	"		980	980
Corporation of Milton	16	"	"	20	1,500	1,700
Corporation of Aston	17	"	"		925	925
Brampton Electric Light Co	18	"	"	35	2,700	3,050
Corporation of Parry Sound	19	"	"	15	4,000	4,000
Corporation of Streetsville	20	"	"		700	700
Corporation of Barrie	21	"	"	52	7,000	7,520
The Alliston Electric Light Co	22	"	"		1,600	1,600
The Monarch Supply Co., Toronto	23	"	"	16	700	860

APPENDIX J—*Continued.*

STATEMENT showing the Electric Light Companies Registered under the Electric Light Inspection Act, during the Year ended March 31, 1910—*Continued.*

Districts.	Name of Company.	Serial Number.	By whom Certificate Issued.	Certificate for Fiscal Year.	Number of Lamps.		
					Arc.	Incandescent.	Totals.
Toronto	Sunderland Electric Power Co., Ltd	24	C.I.R., Toronto	1909-10		600	600
	Penetanguishene and Midland Electric Street Railway, Light and Power Co., Ltd	25	"	"	19	2,500	2,690
	Corporation of Thessalon	26	"	"	13	900	1,030
	Cannington Electric Light Co	27	"	"	11	610	720
	Town of Newmarket	28	"	"		3,000	3,000
	Corporation of the Village of Port Perry	29	"	"	2	900	920
	Simon Plews, Creedmore	30	"	"		500	500
	Corporation of Weston	31	"	"	20	1,525	1,725
	Corporation of Beaton	32	"	"		600	600
	Little Current Lumber Co	33	"	"	37	800	1,170
	The Cataract Electric Co., Ltd., Orangeville	34	"	"	29	1,000	1,290
	The Sagona Water and Light Co., Sault Ste. Marie	35	"	"	216	11,526	13,686
	Corporation City of Toronto	36	"	"	35	1,700	2,050
	The Hamilton Cataract and Power Co., Burlington	37	"	"		2,703	2,703
	Corportion of Midland	38	"	"	31	4,600	4,910
	Corporation of Markham	39	"	"		950	950
	Blind River Light, Heat and Power Co	40	"	"		3,000	3,000
	The Interurban Electric Co., Toronto	41	"	"	184	20,000	21,840
	The Toronto Suburban Railway Co, Toronto	42	"	"		800	800
Montreal	John T. Ayres, Lachute	1	C.I.R., Montreal	1909-10	4	2,000	2,040
	Corporation of the Town of Lachine	2	"	"	72	4,000	4,720
	Corporation of Westmount, Light and Power Department	3	"	"	170	28,000	29,700
	The Valleyfield Electric Co., Ltd	4	"	"		3,200	3,200
	The St. Jérôme Power and Electric Light Co., Ltd	5	"	"	1	1,000	1,010
	Beauharnois Electric Light Co	6	"	"	1	1,610	1,620
	La Compagnie d'Elairage Electrique de Terrebonne	7	"	"	1	1,619	1,629
	Corporation of the Village of Huntingdon	8	"	"		800	800
	The Laurentian Water and Power Co., St. Agathe des Monts	9	"	"	2	800	820
	The Saraguay Electric and Water Co., Montreal	10	"	"		6,000	6,000
	The Montreal Light, Heat and Power Co	11	"	"	3,753	502,573	540,103
	Central Heat, Light and Power Co., Ltd., Montreal	12	"	"	163	7,865	9,495
	Joseph Cyr & Frére, St. Canut	13	"	"		350	350

Quebec	Basin Electric Light and Power Co., Ltd., Montmagny	1	C.I.R., Quebec	1909-10		2,000	2,000
	La Compagnie Hydraulique & Electrique de Lorette, St. Ambroise	2	"	"		1,116	1,116
	Chas. A. Julien, Pont Rouge	3	"	"		600	600
	L'Hospice Ste. Anne, Baie St. Paul	4	"	"		1,000	1,000
	L. P. H. & Henri Grandbois, St. Casimir	5	"	"		350	350
	La Compagnie d'Electricité de Roberval	6	"	"		1,800	1,800
	La Compagnie des Eaux et de l'Electricité, Chicoutimi	7	"	"		5,000	5,000
	St. George's Electric Co., St. Georges and Beauceville	8	"	"		1,100	1,100
	La Compagnie Electrique du Bic	9	"	"		240	240
	The Quebec Railway, Light and Power Co	10	"	"	225	73,000	75,250
	The Quebec-Jacques Cartier Electric Co., Quebec	11	"	"	763	54,640	75,250
	The Labrador Electric and Pulp Co., Murray Bay	12	"	"		3,473	3,473
	The Canadian Electric Light Co., Levis	13	"	"	36	19,830	20,190
	Le Crédit Municipal Canadien, Rimouski	14	"	"		2,000	2,000
	Chas. A. Julien, St. Raymond	15	"	"		1,000	1,000
	Corporation of the Town of Fraserville	16	"	"	42	6,000	6,420
Sherbrooke	J. B. Parker, Dixville	1	C.I.R., Sherbrooke	1909-10		125	125
	Stanstead Electric Light Co	2	"	"	20	1,500	1,700
	Corporation of the Village of Sutton	3	"	"		1,250	1,250
	La Compagnie Champoux, D'Israeli	4	"	"		1,000	1,000
	Corporation of the Town of Coaticook	5	"	"	25	4,000	4,250
	The Eastern Townships Electric Co., North Hatley	6	"	"		1,900	1,900
	R. H. & G. H. Gibson, Danville	7	"	"		1,000	1,000
	H. A. Warby, Westbury and Eaton	8	"	"		1,000	1,000
	D. C. Horner & Son, West Shefford	9	"	"		200	200
	Richmond County Electric Co	10	"	"		2,690	2,690
	Corporation of the Village of Granby	11	"	"	40	3,500	3,900
	Corporation of the Town of Magog	12	"	"		3,000	3,000
	The Great Northern Lumber Co., Scotstown	13	"	"		225	225
	Corporation of the Town of Windsor Mills	14	"	"		1,200	1,200
	Corporation of the Town of Bromptonville	15	"	"		900	900
	Corporation of the City of Sherbrooke	16	"	"	100	27,000	28,000
	La Compagnie d'Eclariage Electrique du Village de Mégantic, Lac Mégantic	17	"	"		1,100	1,100
	J. A. Goulin, Sawyerville	18	"	"		400	400
	Brome Lake Electric Power Co., Waterloo	19	"	"		1,800	1,800
	N. P. Tanguay, Weedon	20	"	"		450	450
St. Hyacinthe	Nelson Buzzell, Cowansville	1	C. I. R., St. Hyacinthe	1909-10		500	500
	G. Poulin, Farnham	2	"	"		1,000	1,000
	Town of Drummondville	3	"	"		1,300	1,300
	The Arthabaska Water and Power Co., Victoriaville	4	"	"		6,182	6,182
	La Fonderie de Plessisville	5	"	"		1,600	1,600
	The St. John Electric Light Co., Ltd	6	"	"	35	8,000	8,350
	La Compagnie du Gaz Electricité et Pouvoir, St. Hyacinthe	7	"	"	40	13,000	13,000
	W. S. Connell & Sons, Stanbridge	8	"	"		250	250
	A. N. Dufresne, St. Césaire	9	"	"		1,800	1,800

APPENDIX J—*Continued.*

STATEMENT showing the Electric Light Companies registered under the Electric Light Inspection Act, during the year ended March 31, 1901—*Continued.*

Districts.	Name of Company.	Serial Number.	By whom Certificate Issued.	Certificate for Fiscal Year.	Number of Lamps.		
					Arc.	Incandescent	Totals.
Three Rivers	Corporation de la Ville de Joliette	1	C. I. R., Joliette	1909-10	27	2,800	3,070
	Dion & Paradis, St. Roch de l'Achigan	2	"	"		550	550
	Laval Electric Co., Charlemagne	3	"	"		420	420
	Laval Electric Co., l'Assomption	4	"	"		890	890
	The North Shore Power Co., Three Rivers	1	C. I. R., Three Rivers	1909-10	120	7,000	8,200
St. John	The Saint John Railway Co. Ltd., St. John	1	C. I. R., St. John	1909-10	768	33,638	41,318
	A. & R. Loggie, Loggieville	2	"	"		350	350
	The Town of Newcastle	3	"	"	27	2,900	3,170
	The Kent Electric Co., Richibucto	4	"	"		1,800	1,800
	Corporation of the Town of Chatham	5	"	"	6	5,000	5,060
	The Sussex Manufacturing Co., Ltd	6	"	"	3	1,350	1,380
	St. Stephen Electric Light Co., Ltd	7	"	"	48	2,335	2,815
	The Bathurst Electric & Water Power Co	8	"	"	10	3,000	3,100
	The Fredericton Gas Light Co	9	"	"	26	5,000	5,260
	The City of Moncton Water and Light Department	10	"	"	84	12,000	12,840
	The Corporation of Campbellton	11	"	"	52	2,200	2,720
	The King Lumber Co., Ltd., Chipman	12	"	"	3	300	330
	C. M. Sherwood, Centreville	13	"	"	5	410	460
	The Dorchester Electric Light and Power Co	14	"	"		800	800
	The Woodstock Electric Railway, Light and Power Co	15	"	"	50	1,700	2,200
	The Andover and Perth Electric Light Commissioners	16	"	"		1,300	1,300
	Sackville Electric Light and Telephone Co.	17	"	"	1	1,800	1,810
Halifax	Halifax Electric Tramway Co., Ltd	1	C. I. R., Halifax	1909-10	377	50,853	54,623
	Canada Electric Co., Ltd., Amherst	2	"	"	29	6,000	6,200
	Edison Electric Light and Power Co., Ltd., Spring Hill	3	"	"		3,000	3,000
	Town of Liverpool Electric Light Plant	4	"	"	30	2,500	2,800
	Town of Annapolis Royal Electric Light Works	5	"	"		1,200	1,200
	Windsor Electric Light and Power Co., Ltd	6	"	"		3,300	3,300
	Acadia Electric Light Co., Wolfville	7	"	"		2,000	2,000
	The Bridgetown Electric Light and Power Co., Ltd	8	"	"		700	700
	Kentville Electric Light and Power Co., Ltd	9	"	"	2	1,800	1,820
	Lunenburg Gas Co., Ltd	10	"	"		2,780	2,780

	Bear River and Digby Electric Light, Heating and Power Co., Ltd.	11	"	"		500	500
	The Yarmouth Street Railway Co., Ltd	12	"	"	5	3,000	3,050
	Daley Electric Light Plant, Digby	13	"	"		800	800
	Town of Parrsboro Electric Light Plant	14	"	"		1,200	1,200
	Oxford Electric Co., Ltd	15	"	"		175	175
	Logan & Co. Electric Light Plant, Shubenacadie	16	"	"		300	300
	The Dartmouth Gas, Electric Light, Heating and Power Co., Ltd	17	"	"		2,000	2,000
	The Chambers Electric Light and Power Co., Ltd., Truro	18	"	"		8,000	8,000
	Town of Bridgewater Electric Light Works	19	"	"		2,900	2,900
	Town of Mahone Bay Board of Water Commissioners	20	"	"	1	500	510
	Acadia Coal Co., Ltd., Stellarton	1	C. I. R., Pictou	1909-10	9	650	740
	Inverness Railway and Coal Co	2	"	"	6	820	880
	The Antigonish Electric Light Co	3	"	"		750	750
	Sydney Mines Electric Co	4	"	"	1	2,689	2,699
	Town of Pictou	5	"	"	35	3,800	4,150
	Cape Breton Electric Co., Ltd., Sydney	6	"	"	62	18,359	18,979
	The Cape Breton Electric Co., Ltd., North Sydney	7	"	"	29	3,430	3,720
	Pictou County Electric Co., Ltd., New Glasgow	8	"	"	42	10,300	10,720
	Sydney and Glace Bay Railway Co., Ltd	9	"	"			
	Corporation of the Town of Glace Bay	10	"	"	8	9,000	9,080
	Nova Scotia Steel and Coal Co., Ltd., Trenton	11	"	"	55	420	970
Clarlottetown	Charlottetown Light and Power Co, Ltd	1	C.I.R., Charlottetown	1909-10	120	12,000	13,200
	Montague Electric Co., Ltd.	2	"	"		500	500
Winnipeg	Town of Kenora	1	C.I.R., Port Arthur	1909-10	90	6,000	6,900
	Corporation of the City of Port Arthur	2	"	"	36	16,000	16,360
	*The Kaministiquia Power Co., Ltd., Fort William	3	"	"			
	Rat Portage Lumber Co., Ltd., Rainy River	4	"	"		300	300
	Rainy River Lumber Co., Ltd., Rainy River	5	"	"	20	300	500
	Corporation of the Town of Dauphin	6	"	"	21	4,000	4,210
	Town of Carman	1	"	1909-10	3	2,500	2,530
	Town of Carberry	2	"	"	16	1,800	1,960
	The Central Electric and Gas Co., Ltd., Portage La Prairie	3	"	"	31	6,000	6,310
	Corporation of the Town of Neepawa	4	"	"	19	3,000	3,190
	The Turtle Mountain Milling Co., Ltd., Boissevain	5	"	"	4	1,000	1,040
	Dauphin Town Electric Light Co	6	"	"	21	4,000	4,210
	Brandon Electric Light Co., Ltd.	7	"	"	100	20,000	21,000
	The Winnipeg Electric Railway Co	8	"	"	384	18,402	22,242
	The Selkirk Electric Light and Power Co	9	"	"		1,800	1,800
	Minnedosa Electric Light Plant	10	"	"	5	1,900	1,950
	The Town of Morden	11	"	"		2,000	2,000
Regina	The Town of Battleford	1	C.I.R., Moose Jaw	1909-10	21	1,300	1,510
	The Moore Milling Co. Ltd., Qu'Appelle	2	"	"	7	800	870
	The Town of Indian Head Municipal Light	3	"	"	38	3,600	3,980
	The City of Regina	4	"	"	88	24,513	25,393
	Arthur Townsend, Milestone	5	"	"		250	250
	The City of Prince Albert	6	"	"	20	6,300	6,500

*For power purposes only.

STATEMENT showing the Electric Light Companies registered under the Electric Light Inspection Act, during the Year ended March 31, 1910—*Concluded.*

Districts.	Name of Company.	Serial Number.	By whom Certificate issued.	Certificate for Fiscal Year.	Number of Lamps.		
					Arc.	Incandescent.	Totals.
Regina	The City of Moose Jaw	7	C.I.R., Moose Jaw	1909-10	67	8,533	9,203
	E. A. Collison, Estevan	8	"	"		900	900
	City of Saskatoon	9	"	"	70	8,629	9,329
	The Weyburn Machine and Electric Light Co	10	"	"		2,100	2,100
Edmonton	Calgary Water Power Co., Ltd	1	C.I.R., Calgary	1909-10		12,000	12,000
	Municipality of Town of Macleod	2	"	"	15	2,500	2,650
	The Western General Electric Co., Ltd., Red Deer	3	"	"	15	1,900	2,050
	Corporation of the City of Calgary	4	"	"	156	25,663	27,223
	Edwin E. Voss, Fort Saskatchewan	5	"	"	4	1,200	1,240
	City of Edmonton	6	"	"	108	28,000	29,080
	City of Strathcona	7	"	"	65	5,000	5,650
	City of Lethbridge	8	"	"	9	12,500	12,590
	Corporation of the City of Wetaskiwin	9	"	"	23	4,000	4,230
	Blindman River Electric Power Co., Ltd., Lacombe	10	"	"	16	1,087	1,247
Vancouver	City of Revelstoke	1	C.I.R., Vancouver	1909-10	11	4,000	4,110
	City of Vernon	2	"	"	27	1,600	1,870
	Crow's Nest Pass Electric Light & Power Co., Ltd., Fernie	3	"	"		800	800
	The Crow's Nest Pass Electric Light & Power Co., Michel	4	"	"	10	700	800
	The Daly Reduction Co., Ltd., Hedley	5	"	"		250	250
	Ashcroft Water, Electric & Improvement Co	6	"	"		500	500
	Kootenay Electric Co., Ltd., Kaslo	7	"	"		890	890
	The Cranbrook Electric Light Co., Ltd	8	"	"	3	4,000	4,030
	The Sandon Water Works & Light Co	9	"	"		344	344
	City of Kamloops	10	"	"		9,000	9,000
	The Consolidated Mining & Smelting Co., Trail	11	"	"	11	1,266	1,376
	Greenwood City Water Works	12	"	"	10	1,800	1,900
	City of New Westminster	13	"	"	145	16,000	17,450
	The West Kootenay Power & Light Co., Rossland	14	"	"	25	5,000	5,250
	Municipality of Spallumcheen, Armstrong	15	"	"	1	821	831
	*Cascade Water Power & Light Co	16	"	"			
	City of Nelson	17	"	"		7,000	7,000
	Corporation of the City of Kelowna	18	"	"	22	800	1,029

	City of Grand Forks	19	"	"	13	1,800	1,930
	Summerland Developments Co.	20	"	"		700	700
	British Columbia Electric Railway Co., Ltd., Vancouver	21	"	"	1,155	235,215	246,765
	British Columbia Electric Railway Co., Ltd., North Vancouver	22	"	"	54	4,761	5,300
	British Columbia Railway Co., Ltd., Ladner	23	"	"		1,439	1,439
	British Columbia Railway Co., Ltd., Chiliwack	24	"	"		1,952	1,952
	British Columbia Electric Railway Co., Ltd., Steveston	25	"	"		3,073	3,073
	British Columbia Lumber Co., Ltd., Prince Rupert	26	"	"		500	500
Victoria	Cumberland Electric Light Co	1	C. I. R., Victoria	1909-10		1,600	1,600
	Nanaimo Electric Light, Power & Heating Ltd	2	" "	"	55	4,650	5,200
	British Columbia Electric Railway Co., Ltd., Victoria	3	" "	"	116	78,531	79,691
	Victoria Electric Co	4	" "	"		72	72
Yukon	The Dawson Electric Light & Power Co	1	C. I. R., Dawson	1909-10		5,000	5,000
	The Yukon Electrical Co., Ltd., Whitehorse	2	" "	"		750	750

* Used by the West Kootenay Light & Power Co., Ltd., as an Auxiliary Plant.

APPENDIX K.

STATEMENT showing the amount of Electrical Energy, generated for export and for consumption in Canada, by the Hydro-Electric Companies operating under the authority of the Electricity and Fluid Exportation Act, during the fiscal year ended March 31, 1910.

Name of Contractor.	Place of Business.	Units generated for Export.		Units generated for Consumption in Canada.		Total Output of generating Station or other Sources.	
		Kilowatt Hours.	H.P. Years.	Kilowatt Hours.	H.P. Years.	Kilowatt Hours.	H.P. Years.
Canadian Niagara Power Company.	Niagara Falls, Ont.....	276,866,417	42,351 60	5,590,383	855 20	282,456,800	43,206 80
Electrical Development Company of Ontario, Ltd.	"	22,496,703	3,441 25	101,155,973	15,473 65	123,652,676	18,914 90
Ontario Power Company of Niagara Falls.....	"	174,116,995	26,631 10	74,853,105	11,450 12	248,970,100	38,081 22
Minnesota and Ontario Power Co..	Fort Francis, Ont.....	170,100	26 00	11,585	1 76	181,685	27 76
Maine & New Brunswick Electrical Power Co., Ltd.....	Aroostook, N.B	1,169,642	178 90	42,360	6 40	1,212,062	185 36
		474,819,857	72,628 85	181,653,406	27,787 13	656,473,263	100,416 08

INLAND REVENUE DEPARTMENT,
OTTAWA, JUNE 9, 1910.

W. J. GERALD,
Deputy Minister.

REPORTS, RETURNS AND STATISTICS

OF THE

INLAND REVENUES

OF THE

DOMINION OF CANADA

FOR THE YEAR ENDED MARCH 31

1910

PART III

ADULTERATION OF FOOD

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
PRINTED BY C. H. PARMELEE, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1910

No. 14—1911]

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"	C	"	Standard Fertilizers 1909	57
"	D	"	Tea	87
"	E	"	Ground Ginger	103
"	F	"	Infants & Invalids Foods	120
"	G	"	Fertilizers as Sold	135
"	H	"	Distilled Liquors Quebec	147
"	I	"	Liquor Picis Carbonis	158
"	J	"	Cream	169
"	K	"	Ice Cream	177
"	L	"	Bran, Shorts, Chop Feed	190
"	M	"	Copper in Vegetables	239
"	N	"	Lard	260
"	O	"	Fruit Jams	261
"	P	"	Cream of Tartar	282
"	Q	"	Ale & Lager Beer	307
"	R	"	Lime Juice	325
"	S	"	Lemon Flavouring Extract	339
"	T	"	Friar's Balsam	350
"	U	"	Highly Coloured Confectionery	359
"	V	"	Flav. Extract of Vanilla	370
"	W	"	Borax (Examination for arsenic)	379
"	X	"	Pepper	391
"	Y	"	Canned Soup	420
"	Z	"	Arsenate of Lead	435

REPORT

OF THE

DEPUTY MINISTER OF INLAND REVENUE.

INSPECTION OF FOODS, DRUGS AND FERTILIZERS.

To the Hon. Wm. Templeman,
Minister of Inland Revenue.

Sir,—I have the honour to submit herewith the reports of the official analysts of the Dominion for the year ending March 31, 1910.

Seventy (70) samples were analysed outside the central laboratories of Ottawa, viz.:—

Description.	Genuine.	Doubtful.	Not Identified.	Total.
Fertilizers	43	2	25	70

The following statement shows the work done by the Chief Analyst and staff at Ottawa, for the year ending March 31, 1910.

Description.	Genuine.	Doubtful.	Adulterated.	Sold as Compound.	Total.
Commercial Cream Tartar	180	4	41		225
Sulphate of Magnesia	150				150
Sulphate of Soda	150				150
Phosphate of Soda	148				148
Tea	172	50			222
Ground Ginger	98	21	31		150
Infants and Invalids Foods					77
Fertilizers as Sold					66
Distilled Liquors					100
Liquor Picis Carbonis	13		6	5 (Proprietary Medicine).	24
Cream					65
Ice Cream					140
Bran, Shorts, Chop-feed					545
Copper in Vegetables					70
Lard	64		4	1 (broken in transit) 1 sold as compound.	70
Fruit Jams	108	7	1	30 sold as compound.	146
Cream of Tartar	180		29	2 lost.	211
Ale and Lager Beer					140
Lime Fruit Juice	42	13	12	9 (sold as cordials)	76
Lemon Flavouring Extract					75
Friar's Balsam	69		1		70
Highly Coloured Confectionery	149				149
Flavouring Extract of Vanilla					77
Borax	135	16			151
Pepper	204	26	49	1 (lost)	280
Canned Soup					150
Arsenate of Lead					26
Total	1862	137	174	49	3,753

In addition to the above, 828 samples of miscellaneous character (detailed in the Report of the Chief Analyst) have been analysed, making the total number 4,581 samples, as against 4,373 for the preceding year 1908-1909.

The defining of standards for food stuffs has progressed satisfactorily and the Advisory Board has prepared standards for the following, viz.:—'Milk and its Products', 'Grain Products', 'Meat and Meat Products' and 'Beverages.

The standards for 'Milk and its products' have, as required by section 26 of 'The Adulteration Act', been submitted for legal authorization. The others will, as speedily as possible, be likewise recommended for legalization.

The provisions of 'The Commercial Feeding Stuffs Act' and 'The Fertilizers Act', relative to registration of brands, have been, I believe, well observed.

I have the honour to be, sir,
Your obedient servant,

W. J. GERALD,
Deputy Minister.

INLAND REVENUE DEPARTMENT,
OTTAWA, June 16, 1910.

REPORT OF THE CHIEF ANALYST.

OTTAWA, May 9, 1910.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I beg to report as follows upon the work of this laboratory, for the fiscal year ending March 31, 1910.

During this period, 3,753 samples were collected by our inspectors. The results of analysis of these are detailed in Bulletins 180 to 205, both inclusive, as follows:—

Number of Bulletin.	Subject.	Number of Samples
180	Commercial Cream of Tartar	225
181	Arsenic as an impurity in drugs	448
183	Tea	222
184	Ground Ginger	150
185	Infants and Invalids Foods	77
186	Commercial Fertilizers as sold	66
187	Distilled Liquors	100
188	Liquor Picis Carbonis	24
189	Cream	65
190	Ice-Cream	140
191	Bran, Chop-feed, Shorts	545
192	Copper in Vegetables	70
193	Lard	70
194	Fruit Jam	146
195	Cream of Tartar	211
196	Ale and Lager Beer	140
197	Lime Juice	76
198	Lemon Flavouring Extract	75
199	Friar's Balsam	70
200	Highly Coloured Confectionery	149
201	Flavouring Extract of Vanilla	77
202	Borax	151
203	Peppers	280
204	Canned Soups	150
205	Arsenate of Lead	26
	Total	3,753

In addition to the above there have been performed the following occasional analyses, during the year:—

Bull. 182—Standard Fertilizers	182
Acetic Acid	28
Alcohol	10
Beer	74
Butter	16
Coal	1
Cake Icing	1

Cream of Tartar	1
Cider	26
Coffee	1
Camphor Spirit	1
Condensed Milk	4
Chocolates	1
Cattle Feed	8
Cheese	2
Cream	12
Disinfectant	1
Fusel Oil	4
Fertilizers	23
Fruit Wine	1
Flavouring Extract	3
Flour	2
Flour Bleaching Solution (Acid)	1
Honey	1
Hemlock Extract	1
Ice Cream	3
Ink	1
Jam	3
Lard	4
Lagerine	1
Lime Juice	1
Liquor Picis Carbonis	1
Medicines (Patent)	13
Maple Sugar	3
" Syrup	8
Mustard	1
Malt	1
Malted Milk	2
Methylated Spirit	1
Milk Flour	1
Nutmeg	1
Oil	1
Oats Rolled	2
Orange Pulp	1
Pepper	3
Paste	1
Spices	7
Stockfeed	1
Sugar	1
Strawberry Flavour Essence	2
Schlitz Fitz	1
Turpentine	4
Vinegar	333
Water	8
Whisky	3
Wine	9
Wood Alcohol	1
	828

The total number of analyses made is therefore 4,581. The following solutions have been prepared and supplied for the use of Excise Officers, in vinegar testing:—

Normal Soda Solution	75 Winchesters
Standard Phenolphthalein	15 bottles.
Standard Sulphuric Acid	5 "

About 40,000 copies of our Bulletins have been mailed from this office during the year, and I am pleased to observe that the public press has interested itself in reporting our work as contained in these publications. It is only by such action on the part of the newspapers that consumers throughout Canada can be made aware of our efforts to make the Adulteration Act truly effective. This Act exists for the protection of the consumer, and I hope that a time will soon come when newspaper readers will expect to find notice of our work in their daily and weekly papers, as a matter of course, and a subject of universal interest.

Mr. Lemoine, of this staff, has given much time to the work of carrying out the Proprietary and Patent Medicine Act.

The Fertilizers Act, of 1909, and the Commercial Feeding Stuffs Act, of 1909, came into force on the first of January of 1910, and the first inspections under the Acts will be made during April and May of this year.

The matter of defining standards for food stuffs, and fixing limits of variation, as required by section 26 of the Adulteration Act, has been frequently referred to in the reports of the Chief Analyst for past years. I am happy to state that during 1909-10, very substantial progress has been made in this regard. The Advisory Board, consisting of Dr. Ellis, of Toronto, Dr. Donald, of Montreal, and the Chief Analyst, has had very extended correspondence with manufacturers, importers and others interested, and has prepared standards for Milk and Milk products, Meat and Meat products, Grain and Grain products, and Beverages (Non-alcoholic and alcoholic). These have been submitted for criticism and suggestion, through the Canadian Manufacturers' Association, to as wide a circle of those interested, as possible, and it is hoped that they will be made legally effective during the current year.

It is unnecessary that I should describe here, in detail, the results of analytical work done, as this matter is fully covered by the introductory chapter of each of the 25 bulletins (180 to 205) submitted along with this report, as an integral part of it.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

OTTAWA, May 7, 1910.

The Deputy Minister of Inland Revenue Department,
Ottawa.

SIR,—I have the honour of submitting to you my report on the analytical work done in my laboratory for your department during the fiscal year ending March 31, 1910.

Only 17 samples of fertilizers were submitted to analysis during that fiscal period. As fertilizers are sold on guaranteed analysis and as the guaranteed composition was not made known to me I am not in a position to state whether all were unadulterated according to the Act.

Yours truly,

F. X. VALADE, M. D.,
Public Analyst for District of Kingston.

VICTORIA, B.C., May 13, 1910.

To the Deputy Minister of Inland Revenue,
Ottawa.

SIR,—I have the honour to submit a tabulated statement showing the general results of the examination of samples submitted to me by the department during the fiscal year ending March 31, 1910.

Samples.	Date.	Genuine.	Adulterated.	Total.
Fertilizers	June 2nd.	10	0	10

I have the honour to be, sir,
Your obedient servant,

C. J. FAGAN,
Public Analyst.

66 BEDFORD ROW,
HALIFAX, N.B., April 25, 1910,

To the Deputy Minister of Inland Revenue,
Ottawa.

SIR,—I have the honour to submit my annual report on the samples of Food, &c., analysed by me during the year ending March 31, 1910.

—	Genuine.	Adulterated.	Total.
Fertilizers	23	0	23

I have the honour to be, sir,
Your obedient servant,

MAYNARD BOWMAN,

112 St. Francois Xavier Street,
Montreal, April 22, 1910.

A. McGill, Esq., F.R.S.C.,
317 Queen St.,
Ottawa.

Sir,—I have the honour to report that during the fiscal year ending March 31, I have analysed twenty samples of commercial Fertilizers. Of these, ten were found to be genuine. Two were slightly under guarantee in phosphoric acid and for two others no guarantee was received; whilst six samples could not be accurately identified.

Yours respectfully,

J. T. DONALD.

APPENDIX A.

BULLETIN No. 180—COMMERCIAL CREAM OF TARTAR.

Ottawa, June 2, 1909.

W. J. Gerald, Esq.,
Deputy Minister of Inland Revenue.

Sir,—I have the honour to report on 225 samples of Commercial Cream of Tartar collected throughout the Dominion of Canada, in January of this year, in accordance with your instructions.

The subjoined synoptical table gives the results of analysis:

District.	Genuine.	Doubtful.	Adulterated	Total.
Nova Scotia	14		1	15
P. E. Island	14		1	15
New Brunswick	15			15
Quebec	5		10	15
St. Hyacinthe	9		6	15
Montreal	6	2	7	15
Ottawa	12	1	2	15
Kingston	15			15
Toronto	3	1	11	15
London	14		1	15
Windsor	15			15
Manitoba	15			15
Calgary	15			15
Vancouver	14		1	15
Victoria	14		1	15
	180	4	41	225

Genuine	80·00 per cent.
Adulterated	18·22 "
Doubtful	1·78 "

These results show an improvement on those obtained in 1905, when 72·2 per cent were found genuine. A fact worthy of notice is that districts of New Brunswick, Kingston, Windsor, Manitoba and Calgary show no adulteration of this product; Nova Scotia, P. E. Island, London, Vancouver and Victoria have only one case each.

In his report of September, 1905, (Bulletin No. 109) the Chief Analyst expressed himself as follows:—

'Ordinary commercial Cream of Tartar is ground argols, which have been more or less purified. Argols invariably contain both tartrate and sulphate of lime, and these lime salts appear in the commercial Cream of Tartar. They result in part from being natural to the wine, but chiefly from the so-called "plastering" of the wine. The manufacturer of Cream of Tartar is not responsible for their presence, but, inasmuch as they

reduce the value of the article for purposes of bread-making, their presence is a distinct disadvantage to the purchaser. It follows that genuine samples of Cream of Tartar may differ greatly in value. Samples containing 97 per cent of bi-tartrate of potash are worth, pound for pound, 12 per cent more than samples containing only 85 per cent. Purified Cream of Tartar is made from argols which have been subjected to processes of solution and recrystallization, by which most of the lime salts are got rid of. Such an article should, of course, command a higher price than the ordinary Cream of Tartar.'

So far the percentage of lime salts (tartrate and sulphate) that could be permitted in commercial Cream of Tartar has not been established, but the Chief Analyst has issued a list of proposed Food Standards, and this subject will, undoubtedly, receive full consideration in due time.

I would respectfully recommend that this report be published as Bulletin No. 180.

I have the honour to be, sir,
Your obedient servant,

ALP. LEMOINE,
Acting Chief Analyst.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufactnrer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
1909.						DISTRICT OF NOVA SCOTIA—	
Jan. 12	Cream of Tartar	33801	Dillon Bros., Halifax, N.S.	½ lb..	20	Nat. Drug and Chem. Co., Halifax, N.S.	
" 12	" ..	33802	E. Donahoe & Sons, Halifax, N.S.	½ " ..	15	Schwartz & Sons, Halifax, N.S.	
" 12	" ..	33803	J. D. Stewart, Halifax, N.S.	½ " ..	14	Bauld Bros., Halifax, N.S.	
" 12	" ..	33804	R. B. Adams & Co., Halifax, N.S.	½ " .	18	John P. Mott & Co, Halifax, N.S.	
" 14	" ..	33805	W. J. Hopgood & Son, Halifax, N.S.	½ " ..	20	Schwartz & Sons, Halifax, N.S.	
" 14	" ..	33806	T. J. Brown, Halifax, N.S.	½ " ..	20	Wentzells Ltd., Halifax, N.S.	
" 14	" ..	33807	W. J. Forristall & Co., Halifax, N.S.	½ " ..	20	Unknown	
" 14	" ..	33808	W. E. Crowe & Co., Halifax, N.S.	½ " ..	20	Todhunter, Mitchell & Co, Toronto.	
" 14	" ..	33809	Shore & Campbell, Halifax, N.S.	¼ " ..	10	Schwartz & Sons, Halifax, N.S.	
" 15	" ..	33810	R. N. McDonald, Halifax, N.S.	½ " .	18	Robt. Greig Mfg. Co., Toronto.	
" 15	" ..	33811	Creig & Hodgson, Halifax, N.S.	½ " ..	15	Can. Drug Co., St. John, N.B.	
" 15	" ..	33812	Wentworth Stores, Windsor, N.S.	½ " ..	18	Unknown	
" 15	" ..	33813	John Dodge & Sons, Windsor, N.S.	½ " .	15	Schwartz & Sons, Halifax, N.S.	
" 15	" ..	33814	M. N. Davison, Windsor, N.S.	½ " ..	15	Unknown	
" 15	" ..	33815	G. A. Orman, Dartmouth, N.S.	½ " ..	18	Bauld Bros., Halifax, N.S.	
						DISTRICT OF PRINCE EDWARD ISLAND—	
Jan 7	Cream of Tartar	31418	Coffin & Co., Charlottetown.	½ lb..	20	E. W. Gillett & Co., Ltd., Toronto.	Gillett's ground cream of tartar. Guaranteed to be absolutely pure.
" 7	" ..	31419	R. K. Brace, Charlottetown.	¼ " ..	14	Greig & Co., Toronto	
" 7	" ..	31420	Geo. Rackham, Charlottetown.	¼ " ..	18	J. P. Mott & Co., Halifax.	
" 7	" ..	31421	W. S. Brown, Charlottetown.	¼ " ..	18	W. H. Schwartz & Sons, Halifax.	
" 7	" ..	31422	H. A. Dunbar, Charlottetown.	¾ " ..	30	Mayell & Co., Toronto.	'Art Brand.' Pure, guaranteed cream of tartar.
" 8	" ..	31423	W. H. Cudmore, Charlottetown.	½ " ..	20	R. E. Mutch, Charlottetown.	
" 8	" ..	31424	J. W. Ferguson, Charlottetown.	½ " ..	20	J. A. Farquharson, Charlottetown.	

SESSIONAL PAPER No. 14

CREAM OF TARTAR.

Results of Analysis.												
Preliminary Examination.				Determinations.							Remarks and Opinion of the Chief Analyst.
Starch.	Sulphates.	Phosphates	Acidity.	Starch.	Kind.	Alumina.	Phosphoric Acid.	Sulphuric Acid.	Calcium Tartrate.	No. of Sample.	
R. J. WAUGH, INSPECTOR.											
None.	None	None.	496	.....	....	.....	.....	.... .	7 00	33801	Genuine, 93 per cent.
" ..	" ..	" ..	500	.. .	.....	... .	.....	... .	. ...	33802	" 94 "
" ..	" ..	" .	480	.. ...	....	.....	.. ..	....	.....	33803	" 90 "
" ..	" ..	" ..	478	. ....	. ....	.....	.....	.....	.....	33804	" 89 "
" ..	" ..	" ..	498	.....	.....	.....	.....	.....	....	33805	" 94 "
" ..	" ..	" ..	480	. ..	.....	.....	.....	.....	....	33806	" 90 "
" ..	" ..	" ..	457	.....	....	.....	.....	.....	12·06	33807	" 86 "
" ..	" .	" ..	516	.....	.....	.....	. .	...	... .	33808	" 97 "
" ..	" ..	" ..	482	.....	....	. ..	.....	.....	.....	33809	" 90 "
" ..	" ..	" ..	502	. ..	.....	.....	.....	. .	.....	33810	" 94 "
" ..	" ..	" ..	476	.....	....	.....	.....	....	.....	33811	" 89 "
" .	" ..	" .	476	...	.....	....	.....	.....	....	33812	" 89 "
" ..	" ..	" ..	476	.....	.....	... .	.....	.....	.....	33813	" 89 "
Present.	Present.	" ..	449	4·85	Maize	1·20	....	10·84	. . .	33814	Adulterated with alum and starch.
None.	None.	" ..	496	.....	.....	.....	....	.....	....	33815	Genuine, 93 per cent.
THEO. MOORE, INSPECTOR.											
None.	None.	None.	534	.....	.....	.....	.....	.....	.... .	31418	Genuine, 100 per cent.
" .	" ..	" ..	504	.....	.....	.....	.....	.....	.....	31419	" 95 "
" ..	" ..	" ..	500	.....	.....	... .	.....	.....	.. ..	31420	" 94 "
" ..	" ..	" ..	466	.....	.....	.....	.....	.....	12·06	31421	" 88 "
" ..	" ..	" ..	476	.....	.....	.....	.....	.....	....	31422	" 89 "
" ..	" ..	" ..	508	.....	..	.....	....	....	.....	31423	" 95 "
" ..	" ..	" ..	500	. ....	.....	..	.....	... ..	.....	31424	" 94

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
1909.							DISTRICT OF PRINCE
Jan. 8	Cream of Tartar.	31425	James Laferty, Charlottetown.	½-lb.	20	John Connolly Co., Charlottetown.	....
" 11	" ..	31426	McGougan & Wright, Summerside.	"	15	Laporte, Martin & Co., Montreal, Que.	.. ..
" 11	" ..	31427	Sinclair & Stewart Summerside.	"	15	Dearborne & Co., St. John, N.B.	.. ..
" 11	" ..	31428	F. W. Strong, Summerside.	"	20	W. H. Schwartz & Sons, Halifax, N.S.	....
" 11	" .	31429	J. A. Hynes, Kensington.	"	18	Geo. E. Barbour Co., Ltd., St. John, N.B.	Guaranteed strictly pure.
" 12	" ..	31430	Jas. Kennedy, Kensington.	"	16	Carvell Bros., Charlottetown.	....
" 12	" ..	31431	P. A. McKenzie, Hunter River.	"	18	Auld Bros., Charlottetown.	....
" 12	" ..	31432	G. H. McGuigan, Hunter River.	"	20	Rathenbury & Co., Charlottetown.	....
							DISTRICT OF NEW BRUNSWICK—
Jan. 5	Cream of Tartar.	29852	Walter Gilbert, St. John, N.B.	½-lb.	20	Gilbert Kent & Son, St. John, N.B.	....
" 5	" ..	29853	Chas. A. Clark, St. John, N.B.	"	20	H. W. Cole, Ltd., St. John, N.B.	. . . .
" 7	" ..	29854	P. Nase & Son, St. John, N.B.	"	15	W. F. Hatheway & Co., St. John, N.B.	.....
" 7	" ..	29855	D. J. Purdy, St. John, N.B.	"	15	L. H. Thorne, St. John, N.B.	Crystals imported and ground by vendor.
" 8	" ..	29856	W. R. Small, St. John, N.B.	"	20	C. H. Cochrane & Co., Ottawa.	....
" 16	" ..	29857	John McKnight, Fredericton, N.B.	"	15	Geo. E. Barbour Co., Ltd., St. John, N.B.	Not guaranteed by vendor, but bought by him for pure cream of tartar.
" 18	" ..	29858	John Graham Estate, Woodstock, N.B.	"	15	" ..	....
" 19	" .	29859	James W. McPhail, Perth, N.B.	"	20	W. C. Purves, St. Stephen, N.B.	....
" 20	" ..	29860	Geo. H. Dewitt, Andover, N.B.	2 pkg.	20	Geo. E. Barbour Co., Ltd., St John, N.B.	'Acorn' brand, strictly pure cream of tartar
" 25	" ..	29861	The Sussex Mercantile Co., Ltd., Sussex, N.B.	½-lb.	15	" ..	.....
" 26	" ..	29862	Geo. O. Stratton, Moncton, N.B.	"	15	D. A. Morrison, Amherst, N.S.	....
" 26	" ..	29863	Geo. A. Robertson, Moncton, N.B.	"	15	Jno. P. Mott & Co., Halifax, N.S.	....
" 27	" ..	29864	Thos. Russell, Newcastle, N.B.	"	15	Baird & Peters, St. John, N.B.	....
" 28	" ..	29865	Simon Holdengraber, Bathurst, N.B.	"	15	F. P. Reid & Co., Moncton, N.B.	. ...
" 28	" ..	29866	W. J. Kent & Co., Ltd., Bathurst.	"	15	H. W. Cole Co., Ltd., St. John, N.B.	....

SESSIONAL PAPER No. 14

CREAM OF TARTAR.

Results of Analysis.												
Preliminary Examination.				Determinations.							Remarks and Opinion of the Chief Analyst.
Starch.	Sulphates.	Phosphates	Acidity.	Starch.	Kind.	Alumina.	Phosphoric Acid.	Sulphuric Acid.	Calcium Tartrate.	No. of Sample.	
EDWARD ISLAND—*Concluded.*											
None.	None.	None.	496	.....	...	...	.....	....	.....	31425	Genuine. 93 per cent.
Present.	Present.	Present.	493	1·36	Maize	0·40	3·60	2·59	.....	31426	Alum phosphate substitute, adulterated.
None.	None.	None.	492	...	.....	.....	.....	.....	...	31427	Genuine. 93 per cent.
"	"	"	502	.....	.....	.....	.....	.....	.....	31428	" 94 "
"	"	"	486	.....	.....	.....	.....	.....	.....	31429	" 91 "
"	"	"	500	.....	.....	.....	.....	.....	.....	31430	" 94 "
"	"	"	472	.....	.....	.....	.....	.....	.....	31431	" 89 "
"	"	"	472	.....	.....	.....	.....	.....	.....	31432	" 89 "
J. C. FERGUSON, INSPECTOR.											
"	"	"	472	.....	.....	.....	.....	.....	.....	29852	" 89 "
"	"	"	486	.....	.....	.....	.....	.....	.....	29853	" 91 "
"	"	"	484	.....	.....	.....	.....	.....	.....	29854	" 91 "
"	"	"	480	.....	.....	.....	.....	.....	.....	29855	" 90 "
"	"	"	506	.....	.....	.....	.....	.....	.....	29856	" 95 "
"	"	"	486	.....	.....	.....	.....	.....	.....	29857	" 91 "
"	"	"	482	.....	.....	.....	.....	.....	.....	29858	" 90 "
"	"	"	474	.....	.....	.....	.....	.....	.....	29859	" 89 "
"	"	"	472	.....	.....	.....	.....	.....	.....	29860	" 89 "
"	"	"	470	.....	.....	.....	.....	.....	12·00	29861	" 88 "
"	"	"	496	.....	.....	.....	.....	.....	.....	29862	" 93 "
"	"	"	480	.....	.....	.....	.....	.....	.....	29863	" 90 "
"	"	"	474	.....	.....	.....	.....	.....	.....	29864	" 89 "
"	"	"	480	.....	.....	.....	.....	.....	.....	29865	" 90 "
"	"	"	480	.....	.....	.....	.....	.....	.....	29866	" 90 "

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
1909						DISTRICT OF QUEBEC—	
Jan. 4	Cream of Tartar	36823	Arthur Rinfret, 414 St. Joseph St., Que.	½ lb.	20	Unknown	
14	"	36824	Arthur Drolet, 714 St. Valier St., Quebec.	½ "	18	Nat. Drug. Co., Montreal.	
" 15	"	36825	Hamel & Bedard, 728 St. Valier St., Que.	½ "	20	Turcotte & Fréres, Quebec.	
" 15	"	36826	G. G. Hamel, 914 St. Valier St., Quebec.	½ "	20	Unknown	
" 15	"	36827	A. Pichette, 322 Arago St., Quebec.	½ "	15	Unkown	
" 15	"	36828	F. X. Lachance, 189 Bayard St., Quebec.	½ "	18	Turcotte & Fréres, Quebec.	
" 15	"	36829	G Galarneau, 146 Bayard St., Quebec.	½ "	20	H. Blouin, Quebec.	
" 15	"	36830	S. Turcotte, 143 Bayard St., Quebec.	½ "	20	N. Turcotte & Co., Quebec.	
" 18	"	36831	T. Pepin, 132 Massue St., Quebec.	½ "	20	Turcotte & Fréres, Quebec.	
" 18	"	36832	Elzear Poitras, 185 Massue St., Quebec.	½ "	20	Unknown.	
" 18	"	36833	Mad. Joseph Primeau 107 Rue St. Luc., Q	½ "	20	Unknown	
" 18	"	36834	Mad. V. M. Denis, 92 Bayard St., Quebec	½ "	20	Unknown	
" 18	"	36835	O. Bacon, 28 Hermine St., Quebec.	½ "	20	Langlois & Paradis, Quebec.	
" 18	"	36836	Mad. T. Laberge, 84 Victoria St., Quebec	½ "	20	Unknown.	
" 18	"	36837	F. X. Page, 114 Victoria St., Quebec.	½ "	20	Unknown	
						DISTRICT OF ST. HYACINTHE—	
Jan. 11	Cream of Tartar	907	Geo. Beaulac, Sorel.	½ lb.	18	C. Labelle & Co., Sorel.	
" 11	"	908	H. De Labarre, Lock St. Ours.	½ "	20	Lacaille, Gendreau & Co., Montreal.	From a 5 lb. box marked Pure Ground Cream of Tartar.
" 12	"	909	P. Lariviere, St. Ours.	¼ "	10	Lacaille, Gendreau & Co., Montreal.	"
" 13	"	910	F. A. Bourgault. Drummondville.	¼ "	10	Hudon & Orsali, Montreal.	"
" 13	"	911	Guertin & Archambault, Actonvale.	¼ "	10	R. Lafortune, Actonvale.	
" 14	"	912	H. H. Guay, Victoriaville.	¼ "	10	Herron, Leblanc & Co., Montreal.	
" 14	"	913	P. J. Girard, Richmond.	8 oz. Can	20	Pure Gold Mfg. Co. Toronto.	Can labelled pure French cream of tartar.
" 14	"	914	Denault Grain & Prv. Co., Sherbrooke.	¼ lb.	free	W. & P. Currie, Montreal.	Sample from a barrel marked cream of tartar.

SESSIONAL PAPER No. 14

CREAM OF TARTAR.

Results of Analysis.												
Preliminary Examination.				Determinations.							Remarks. and Opinion of the Chief Analyst.
Starch.	Sulphates.	Phosphates.	Acidity.	Starch.	Kind.	Alumina.	Phosphoric Acid.	Sulphuric Acid.	Calcium Tartrate.	No. of Sample.	
E. BELAND, INSPECTOR.											
Present.	Present.	Present.	382	21·17	Maize	1·20	4·32	5·37	.....	36823	Alum phosphate mixture, adulterated.
None.	Trace present.	None.	483	. ...	.. ...	.....	.....	0·10	.....	36824	Genuine, 89 per cent.
Present.	Present.	Present.	424	33·98	Maize	1·00	15·55	8·34	....	36825	Alum phosphate mixture, adulterated.
None.	None.	None.	476	.....	... ..	.....	.....	.....	.....	36826	Genuine, 89 per cent.
"	"	"	484	.....		....	.....	.....	.. ..	36827	" 91 "
Present.	Present.	Present.	357	36·73	Maize	0·80	14·75	11·08	.....	36828	Alum phosphate mixture, adulterated.
"	"	"	525	3·79	"	0·20	11·95	4·58	.....	36829	Alum phosphate mixture, adulterated.
"	"	Trace.	455	5·08	"	1·30	0·05	10·20	.....	36830	Alum mixture, adulterated.
"	"	Present.	126	47·92	"	1·70	0·10	7·15	... ..	36831	Alum mixture, adulterated.
None.	None.	Trace. Present.	489	.....	.....	.....	0·17	.....	.....	36832	Genuine, 90 per cent.
Present.	Present.	Present	495	10·70	Maize	0·70	22·57	14·09	.....	36833	Alum phosphate mixture, adulterated.
"	"	"	352	26·30	"	0.40	4·55	3·52	...	36834	Alum phosphate mixture, adulterated.
"	"	None.	489	10·90	"	2 10	...	9·54	.....	36835	Alum mixture, adulterated.
"	"	"	466	4·95	"	1·40	. ..	9·91	.....	36836	Alum mixture, adulterated.
None.	None.	"	488	.....	.....	.. ..	.....	.....	.....	36837	Genuine, 92 per cent.
J. C. ROULEAU, INSPECTOR.											
Present.	None.	None.	373	8·33	Rice	.....	.....	.....	.....	907	Addition of starch, adulterated.
None.	None.	"	482	.....	.....	.....	.....	.....	.....	908	Genuine, 90 per cent.
"	"	"	490	.....	.....	.....	.....	.....	.....	909	" 92 "
"	"	"	478	.....	.....	.....	....	.	.....	910	" 89 "
Present.	Present.	Present.	271	52·76	Maize	0·60	8·45	6·60	.....	911	Alum phosphate mixture, adulterated.
"	"	"	495	4·05	"	0·80	8·25	5 01	.....	912	Alum phosphate mixture, adulterated.
None	None	None.	504	.....	.....	.....	.....	.....	.. ...	913	Genuine, 95 per cent.
"	"	"	484	....	.....	.....	...	...	.....	914	" 91 "

Date of Collection.	Nature of Sample.	No. of Sample.	Name and address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
1909.			DISTRICT OF ST. HYACINTHE—				
Jan. 14	Cream of Tartar	915	C. O. Genest & Fils, Sherbrooke.	¼ lb.	10	E. W. Gillett Co., Ltd., Toronto.	Guaranteed to be absolut'ly pure.
" 14	"	916	H. H. Edwards, Coaticook.	¼ "	09	Mathewsons Sons, Montreal.	
" 19	"	917	Adelard Robert, Farnham.	¼ "	10	Hudon & Orsali, Montreal.	Box marked pure ground cream of tartar.
" 19	"	918	N. Mitchell & Co., Granby.	¼ "	10	L. Chaput, Fils & Co., Montreal.	
" 20	"	919	R. Goold, St. Jean, Que.	¼ "	10	Forbes Bros., Montreal.	
" 21	"	920	J. A. Girard, St. Hyacinthe.	¼ "	10	Not known	
" 21	"	921	E. Benoit, St. Hyacinthe.	¼ "	09	Herron, Leblanc & Cie., Montreal.	
1909.			DISTRICT OF MONTREAL—				
Jan. 4	Cream of Tartar	32646	J. H. Goyer, 4451 St. Catherines & Westmount.	½ lb.	20		
" 4	"	32647	E. Gervais, 4500 St. Catherines & Westmount, Que.	½ "	20	Not given.	
" 4	"	32648	Samuel Smith & Co., 4206 St. Catherines Westmount, Que.	½ "	20	S. H. Ewing & Sons, Montreal.	
" 4	"	32649	W. Elliott, 300 Greene Ave., Westmount.	½ "	15	Unknown	
" 4	"	32650	J. B. Banville, 193 St. George St., Montreal	½ "	20	Not given	
" 4	"	32651	Walter Paul, 80 University St., Montreal	2 tins	30		Put up expressly for vendor in ¼ lb. tins.
" 5	"	32652	H. G. Smith, 1551 St. Urbain, Ville St. Louis.	½ lb.	20	S. H. Ewing & Sons, Montreal.	
" 5	"	32653	D. Hamilton, 77 Fairmount, V. St. Louis	½ "	20	Not known	
" 5	"	32654	W. Cairns, 81 St. Viateur, Ville St. Louis	½ "	20	Not known	
" 7	"	32655	Richer & Page, Valleyfield, P. Q.	½ "	20		
" 7	"	32656	O. Longtin, Valleyfield, P.Q.	½ "	20	L. Chaput, Fils & Co. Montreal.	
" 9	"	32657	A. Montpetit, St. Anne de Bellevue, P.Q.	½ "	18	L. Chaput, Fils & Co., Montreal.	
" 11	"	32658	George Dixon, Huntingdon, P.Q.	½ "	20	Not known	
" 12	"	32659	C. Martineau, St. Gabriel de Brandon	½ "	20	Not known	
" 22	"	32660	N. Boivin, Lachute Mills, P.Q.	2 pkgs	20	C. H. Cochrane & Co. Ottawa.	Guaranteed pure.

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CREAM OF TARTAR.

Results of Analysis.												
Preliminary Examination.				Determinations.								Remarks and Opinion of the Chief Analyst.
Starch.	Sulphates.	Phosphates	Acidity.	Starch.	Kind.	Alumina.	Phosphoric Acid.	Sulphuric Acid.	Calcium Oxide (Ca. O.)	No. of Sample.	
Continued.												
None.	None.	None.	534	.....	.....	.....	.....	.....	...	915	Genuine, 100 per cent.
Present.	Present.	Present.	494	0·76	Maize	0·30	8·35	7·35	8·60	916	Alum phosphate mixture, adulterated.
None.	None.	None.	474	.....	.....	.....	.....	.....	.....	917	Genuine, 89 per cent.
"	"	"	476	.....	.....	.....	.....	.....	.....	918	" 89 "
"	"	"	482	.....	.....	.....	.....	.....	.....	919	" 90 "
Present.	Present.	Present.	254	58·81	Maize	0·50	8·45	6·48	.....	920	Alum phosphate mixture, adulterated.
"	"	"	518	3·73	"	0·50	8·25	4·44	.....	921	Alum phosphate mixture, adulterated.
J. J. COSTIGAN, INSPECTOR.												
Present.	Present.	Present.	468	3·13	Maize	0·60	6·90	6·60	.....	32646	Alum phosphate mixture, adulterated.
"	"	"	468	3·43	"	0·40	6·90	7·49	.....	32647	Alum phosphate mixture, adulterated.
"	"	"	495	2·89	"	0·20	7·45	8·10	.....	32648	Alum phosphate mixture, adulterated.
"	"	"	487	2·82	"	0·40	8·45	8·41	.....	32649	Alum phosphate mixture, adulterated.
"	"	"	506	1.91	"	0·70	6·20	3·63	.....	32650	Alum phosphate mixture, adulterated.
None.	None.	None.	488	.....	.....	.....	.....	.....	.....	32651	Genuine, 92 per cent.
Present.	"	"	482	2·56	"	.....	.....	.....	.....	32652	Contains a little starch, apparently accidental. Doubtful.
None.	"	"	472	.....	.....	.....	.....	.....	.....	32653	Genuine, 89 per cent.
Present.	"	"	285	16·87	"	.....	.....	.....	.....	32654	Adulterated with corn starch.
"	Present.	Present.	497	6·28	"	0·90	8·72	5·40	.....	32655	Alum phosphate mixture, adulterated.
None.	None.	None.	470	.....	.....	.....	.....	.....	.....	32656	Genuine, 89 per cent.
"	"	"	496	.....	.....	.....	.....	.....	.....	32657	" 93 "
"	"	"	476	.....	.....	.....	.....	.....	.....	32658	" 89 "
Present.	Present.	Present.	456	5·15	"	0·40	0·45	1·23	.....	32659	Small qty. alum phosphate, Doubtful.
None.	None.	None.	474	.....	.....	.....	.....	.....	.....	32660	Genuine, 89 per cent.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cts.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
1909.						DISTRICT OF OTTAWA—	
Jan. 5	Cream of Tartar	22771	A. Bergeron Hawkesbury	lb.	20	Pure Gold Mfg. Co., Toronto	Sold as cream of tartar
" 5	"	22772	Banford & Dunning, Hawkesbury	"	"	F. F. Dalley Co., Ltd., Hamilton	"
" 6	"	22773	The Foster, Bennett Co., Ltd., River Desert	"	25	H. N. Bate & Sons., Ottawa	"
" 7	"	22774	Alexander Maclaren, Wakefield	"	18	Nat. Drug & Chemical Co., Ottawa.	"
" 7	"	22775	George Patterson, Wakefield	"	20	H. N. Bate & Sons., Ottawa	"
" 8	"	22776	Chester Casselman, Chesterville, O.	"	18	Not known	"
" 8	"	22777	J. T. Kearns, Chesterville, O.	"	20	Forbes Bros., Montreal	"
" 8	"	22778	Lewis Bros., Richmond, O.	"	16	Not known	"
" 12	"	22779	W. W. Mann & Co., Stittsville, O.	"	20	Galbraith & Sons, Montreal	"
" 13	"	22780	A. Ault, Kemptville,		20	Mr. Sanders, Kemptville	"
" 13	"	22781	L. M. Davidson, Kemptville	"	20	Gilmour & Co., Brockville	Sample from box marked pure c. of tartar. Sold as cream of tartar.
" 18	"	22782	H. Richardson, Ottawa	"	18	C. H. Cochrane & Co., Ottawa	Sold as pure cream of tartar
" 18	"	22783	E. J. Mills, Ottawa	"	20	F. J. Castle Co., Ottawa	Sold as cream of tartar
" 18	"	22784	Geo. J. Young, Ottawa	"	20	H. N. Bate & Sons, Ottawa.	"
" 18	"	22785	W. J. Eastcott, Ottawa	"	20	C. H. Cochrane & Co., Ottawa	"
1909.						DISTRICT OF KINGSTON.—	
Jan. 6	Cream of Tartar	39401	A. Glover, Kingston.	½ lb.	20	H. Skinner & Co., Kingston	
" 7	"	39402	H. M. Stover, Kingston	"	20	A. Maclean, Kingston	
" 7	"	39403	C. Litton, Kingston,	¾ "	30	C. H. Cochrane & Co., Ottawa	
" 7	"	39404	F. Ostler, Kingston	½ "	20	C. H. Cochrane & Co., Ottawa	
" 7	"	39405	W. J. Nesbitt, Kingston	¾ "	30	McLarens, Hamilton	
" 7	"	39406	C. H. Pickering, Kingston	½ "	20	Gorman & Eckert, London	
" 7	"	39407	C. Saunders, Kingston	½ "	20	S. H. & W. H. Ewing, Montreal	
" 7	"	39408	Anderson Bros., Kingston.	½ "	25	McLarens, Hamilton	
" 7	"	39409	J. Kelly, Kingston	½ "	25	Pure Gold, Toronto.	
" 7	"	39410	Kirk & Lee "	½ "	30	Geo. Robertson & Sons, Kingston.	

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CREAM OF TARTAR.

Results of Analysis.

Preliminary Examination.				Determinations.						No. of Sample.	Remarks and Opinion of the Chief Analyst.
Starch.	Sulphates.	Phosphates	Acidity.	Starch.	Kind.	Alumina.	Phosphoric Acid.	Sulphuric Acid.	Calcium Tartrate.		
J. A. RICKEY, INSPECTOR.											
Trace.	None.	None.	488	0·03	.....	.....	.....	.....	.....	22771	Genuine, 91 per cent.
None.	"	"	488	.....	.....	.....	.....	.....	.....	22772	Genuine, 92 per cent.
"	"	"	530	.....	.....	.....	.....	.....	.....	22773	" 99 "
"	"	"	430	.....	.....	.....	.....	.....	9·28	22774	" 81 "
"	"	"	430	.....	.....	.....	.....	.....	1·85	22775	" 81 "
None.	None.	None.	476	.....	.....	.....	.....	.....	.....	22776	" 89 "
Trace.	"	"	489	0·28	Maize	.....	.....	.....	.....	22777	" 91 "
Present.	Trace.	"	487	1·54	"	0·50	.....	.....	1·06	22778	Traces of Alum.....—Doubtful.
None.	None.	"	480	.....	.....	.....	.....	.....	.....	22779	Genuine, 90 per cent.
"	"	"	480	.....	.....	.....	.....	.....	.....	22780	" 90 "
Present.	Present.	"	493	11·55	"	2·20	.....	10·63	.....	22781	Alum mixture, adulterated.
None.	None.	None.	506	.....	.....	.....	.....	.....	.....	22782	Genuine, 95 per cent.
"	"	"	472	.....	.....	.....	.....	.....	.....	22783	" 89 "
Present.	Present.	"	506	10·22	"	1·60	.....	6·42	.....	22784	Alum mixture, adulterated.
None.	None.	"	510	.....	.....	.....	.....	.....	.....	22785	Genuine, 96 per cent.
JAS. HOGAN, INSPECTOR.											
None.	None.	None.	504	.....	.....	.....	.....	.....	.....	39401	Genuine, 95 per cent.
"	"	"	498	.....	.....	.....	.....	.....	.....	39402	" 94 "
"	"	"	500	.....	.....	.....	.....	.....	.....	39403	" 94 "
"	"	"	506	.....	.....	.....	.....	.....	.....	39404	" 95 "
"	"	"	482	.....	.....	.....	.....	.....	.....	39405	" 90 "
"	"	"	488	.....	.....	.....	.....	.....	.....	39406	" 92 "
"	"	"	476	.....	.....	.....	.....	.....	.....	39407	" 89 "
Trace.	"	"	490	.....	.....	.....	.....	.....	8·00	39408	" 92 "
pres't. none.	"	"	530	.....	.....	.....	.....	.....	.....	39409	" 99 "
"	"	"	486	.....	.....	.....	.....	.....	.....	39410	" 91 "

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
1909.							DISTRICT OF KINGSTON—
Jan. 11	Cream of Tartar	39411	R. Elvin, Belleville	¾ " ..	30	E. W. Gillett, Toronto.	.....
" 11	" ..	39412	H.E.Fairfield, "	½ " ..	15	J. M. Lowes, Toronto.	....
" 11	" ..	39413	J. Curtis, Port Hope.	½ " ..	20	C. H. Cochrane, Ottawa.	.....
" 11	" ..	39414	F. H. Brown " .	½ " ..	20	Pure Gold, Toronto.	.....
" 12	" ..	39415	A. J. Roulty, Peterboro.	½ " ..	20	Greig Co., Toronto.	....
							DISTRICT OF TORONTO—
Jan. 4	Cream of Tartar	36151	F. G. Wilson, Toronto	½ lb..	20	Dalton Bros. Toronto	Sample from tin labelled cream of tartar.
" 4	" ..	36152	J. C. Doyle "	½ " ..	20	R. B. Hayhe & Co., Toronto.	Sample from drawer labell'd cream of tartar
" 5	" ..	36153	Crapper's Grocery, Toronto.	½ " ..	20	Dalton Bros., Toronto	Sample from tin labelled Dalton's extra select cream of tartar.
" 7	" ..	36154	Arthur Butcher, Toronto.	½ " ..	20	" " ..	Sample from tin labelled Dalton's extra select cream of tartar.
" 7	" .	36155	Mrs. M. Crittall, Toronto.	½ " ..	20	Jno. Sloan & Co., Toronto.	....
" 12	" ..	36156	D. Mahony, Hamilton	½ " ..	20	Not known	... .
" 13	" ..	36157	Holt & Co., "	½ " ..	20	"	Labelled Gillett's cream of tartar.
" 14	" ..	36158	Campaigne Bros , Niagara Falls Centre.	½ " .	20	Young Winfield, Hamilton.	Sample from tin labelled cream of tartar.
" 15	" ..	36159	W. T. Richardson, St. Catharines.	½ " ..	18	Dalton Bros., Toronto	Sample from tin labelled cream of tartar, from Dalton Bros , Toronto.
" 15	" ..	36160	Becker & Co., St. Catharines.	½ " ..	20	Not known.....	Sample from tin labelled cream of tartar.
" 20	" .	36161	J. H. Hall, Toronto	½ " ..	20	Dalton Bros., Toronto	Sample from tin labelled cream of Tartar.
" 20	" ..	36162	A. L. Anderson, West Toronto.	½ " ..	18	R. B. Hayhe & Co., Toronto.	Sample from tin labelled cream of tartar.
" 20	" ..	36163	Adamson & Golding, West Toronto.	½ " ..	15	Dalton Bros., Toronto	Sample from tin labelled cream of tartar.
" 21	" ..	36164	J. J. Lucas, East Toronto.	½ " ..	20	" "	Sample from tin labelled Dalton's extra select cream of tartar.
" 21	" ..	36165	F. H. Bible, Toronto	½ " ..	20	" "	Sample from tin labelled cream of tartar

SESSIONAL PAPER No. 14

CREAM OF TARTAR.

Results of Analysis.											
Preliminary Examination.				Determinations.						No. of Sample.	Remarks and Opinion of the Chief Analyst.
Starch.	Sulphates.	Phosphates	Acidity.	Starch.	Kind.	Alumina.	Phosphoric Acid.	Sulphuri Acid.	Calcium Oxide (Ca.O).		
Continued.											
None.	None.	None.	534							39411	Genuine, 100 per cent.
"	"	"	484							39412	" 91 "
"	"	"	500							39413	" 94 "
"	"	"	510							39414	" 96 "
"	"	"	516							39415	" 97 "
H. J. DAGER, INSPECTOR.											
Present.	Present.	None.	527	8·83	Maize	0·40		6·73	0·60	36151	Alum mixture, adulterated.
None.	None.	None.	478							36152	Genuine, 89 per cent.
Present.	Present.	"	476	11·80	"	2·00		10·02	3·00	36153	Alum mixture, adulterated.
"	"	"	478	11·42	"	1·70		10·60	3·40	36154	"
"	"	"	508	8·03	"	1·50		5 23	1·40	36155	" "
"	"	"	497	28 13	"	6 10		18·27	0·80	36156	" "
"	"	"	182	27·18	"	3·20		8·14	0·60	36157	" "
None.	None.	None.	499	0·21	"			0·20		36158	Genuine, 93 per cent.
Present.	Present.	"	485	7·93	"	1·40		8·48	3·00	36159	Alum mixture, adulterated.
"	Trace.	"	484	1·77	"	0·20		0·78	2 00	36160	Trace of starch and alum Doubtful.
"	Present.	"	487	11·89	"	2·00		10·74	3·00	36161	Alum mixture, adulterated.
None.	None.	"	506							36162	Genuine, 95 per cent.
Present.	Present.	"	504	8·79	"	2·20		8·41	2·40	36163	Alum mixture, adulterated.
"	"	"	484	11·69	"	2·50		10·15	3·00	36164	" "
"	"	"	491	10·89	"	3·20		9·75	2·60	36165	" "

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
1909.						DISTRICT OF LONDON—	
Jan. 6	Cream of Tartar	30552	Sturdy & Co., Goderich.	½ lb.	20	Canada Spice & GroceryCo., London, O.	
" 6	"	30554	P. J. Dean, Goderich	½ "	18	Not known	
" 7	"	30557	O. C. Whitely, "	½ "	15	A. M. Smith, & Co., London, Ont.	
" 8	"	30561	Cardino Bros., Seaforth.	½ "	20	Gorman, Eckert & Co., London, Ont.	
" 8	"	30562	Mathew Williams, Seaforth.	¾ "	30	E. W. Gillett Co., Toronto, Ont.	
" 11	"	30564	Harrison Wiltse, Clinton.	½ "	20	Robt. Greig & Co., Toronto, Ont.	
" 11	"	30566	Thos Beacom, Clinton	½ "	20	Gorman & Eckert, London, Ont.	
" 12	"	30570	M. Durkin Mitchell.	½ "	20	Canada Spice & GroceryCo., London, O.	
" 13	"	30573	W. R. Butcher, St. Marys.	½ "	20	McLarens, Hamilton	
" 13	"	30574	Peckard & Fleming, St. Marys.	½ "	20	Gorman & Eckert London, Ont.	
" 14	"	30577	Edward O'Flaherty, Stratford.	½ "	20	Hamilton Coffee and Spice Co., Hamil'n.	
" 14	"	30579	A. G. Lloyd, Stratford.	¾ "	30	Gorman & Eckert, London, Ont	
" 14	"	30580	Barnsdale Trading Co., Stratford.	½ "	20	McLarens, Hamilton	Furnished as compound.
" 14	"	30582	Walsh Bros., Stratford.	½ "	20	Robt. Greig & Co., Toronto, Ont.	
" 16	"	30585	J. A. McRae & Son, Guelph.	½ "	20	Toddhunter & Mitchell, Toronto, O.	
						DISTRICT OF WINDSOR—	
Jan. 6	Cream of Tartar	34713	Penney Bros. & McIntosh, London, O.	½ lb.	20	Canada Spice & GroceryCo., London, O.	
" 6	"	34714	John Procter, London, Ont.	½ "	20	London Drug Co.,	
" 6	"	34715	Marr Bros., London, Ont.	½ "	20	Gorman, Eckert & Co., London, Ont.	
" 6	"	34716	Wm. Smith, London, Ont.	½ "	20	Gorman, Eckert & Co., London, Ont.	
" 6	"	34717	A. Rosenberger, London.	½ "	20	A. M. Smith & Co., London, Ont.	
" 6	"	34718	A. Johnson, London, Ont.	½ "	20	E. W. Gillett & Co., Toronto, Ont.	
" 6	"	34719	John Deprose, London, Ont.	½ "	20	Canada Spice & GroceryCo., London, O.	
" 6	"	34720	Hockin Bros., London, Ont.	½ lb.	20	Gorman, Eckert & Co., London, Ont.	
" 6	"	34721	Ryan & Russell, London, Ont.	½ "	20	Gorman, Eckert & Co., London, Ont.	
" 6	"	34722	A. McCormick & Son, London, Ont.	½ "	20	Canada Spice and Grocery Co., London, Ont.	

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CREAM OF TARTAR.

Results of Analysis.

Preliminary Examination.			Determinations.							No. of Sample.	Remarks and Opinion of the Chief Analyst.
Starch.	Sulphates.	Phosphates.	Acidity.	Starch.	Kind.	Alumina.	Phosphoric Acid.	Sulphuric Acid.	Calcium Tartrate.		
T. KIDD, INSPECTOR.											
None.	None.	None.	500							30552	Genuine, 94 per cent.
" ..	" ..	" ..	460							30554	" 87 "
" ..	" ..	" ..	534							30557	" 100
" ..	" ..	" ..	482							20561	" 90 "
" ..	" ..	" ..	534							30562	" 100 "
" ..	" ..	" ..	476							30564	" 89
" ..	" ..	" ..	514							30566	" 97 "
" ..	" ..	" ..	480							30570	" 90 "
" ..	" ..	" ..	508							30573	" 95 "
" ..	" ..	" ..	484							30574	" 91 "
" ..	" ..	" ..	478							30577	" 89 "
" ..	" ..	" ..	510							30579	" 94 "
Present.	Trace.	" ..	373	20·74	Maize	0·30		0·67		30580	Starch and a trace of alum.
None.	None.	" ..	502							30582	Genuine, 94 per cent.
" ..	" ..	" ..	500							30585	" 94 "
J. TALBOT, INSPECTOR.											
None.	None.	None.	502							34713	Genuine, 94 per cent.
" ..	" ..	" ..	484							34714	" 91 "
" ..	" ..	" ..	476							34715	" 89 "
" ..	" ..	" ..	480							34716	" 90 "
" ..	" ..	" ..	520							34717	" 98 "
" ..	" ..	" ..	532							34718	" 100 "
" ..	" ..	" ..	498							34719	" 94 "
" ..	" ..	" ..	498							34720	" 94 "
" ..	" ..	" ..	496							34721	" 93 "
" ..	" ..	" ..	502							34722	" 94 "

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
1909.						DISTRICT OF WINDSOR—	
Jan. 6	Cream of Tartar	34723	N. McLeod, London, Ont.	½ " ..	20	Gorman, Eckert & Co., London, Ont	
" 6	" ..	34724	F. C. Toon, London, Ont.	½ " ..	20	Gorman Eckert & Co., London, Ont.	
" 6	" ..	34725	G. Armstrong, London, Ont.	½ " ..	20	Not known...	
" 6	" ..	31726	H. Ranahan, London. Ont.	½ " ..	20	Canada Spice and Grocery Co., London, Ont.	
" 6	" ..	34727	W. Bloomfield, London, Ont.	½ " ..	20	Gorman, Eckert & Co., London, Ont.	
						DISTRICT OF MANITOBA—	
Jan. 11	Cream of Tartar	35801	S. Elliott & Co., Winnipeg.	½ lb..	20	Not given.	
" 11	" ..	35802	C. Hoffman & Son, Winnipeg.	½ " ..	20	A. Macdonald & Co., Winnipeg, Man.	
" 11	" ..	35803	G. Otto, Winnipeg..	½ " ..	20	The Codville Co., Winnipeg, Man.	
" 11	" ..	35804	Morris Macklin, Winnipeg.	½ " ..	20	The Gold Standard Mfg. Co., Winnipeg, Man.	
" 11	" ..	35805	G. Guirgnard, Winnipeg.	½ " ..	20	Campbell Bros., Wilson, Winnipeg, Man.	
" 13	" ..	35806	J. F. Price & Co., Brandon.	½ " ..	20	Not given.	
" 13	" ..	35807	Mutter & Lynch, Brandon.	½ " ..	20	"	
" 13	" ..	35808	A Grant, Brandon..	½ " ..	25	The Codville Co., Winnipeg, Man-	
" 13	" ..	35809	Murdock & Wilson, Virden.	½ " ..	25	Gorman, Eckert & Co., London, Ont.	
" 13	" ..	35810	McLellan & English, Virden.	½ " ..	20	R. Mackenzie & Co., Winnipeg, Man.	
" 13	" ..	35811	Clingan, Scales & Carscadden, Virden	½ " ..	25	E. W. Gillett Co., Ltd., Toronto.	
" 14	" ..	35812	The A. E. Hill Co., Hartney.	½ " ..	25	E. W. Gillett Co., Ltd., Toronto.	
" 19	" ..	35813	Smellie Bros., Ltd., Shoal Lake.	½ " ..	25	The Blue Ribbon, Ltd., Winnipeg, Man.	Pure cream of tartar.
" 19	" ..	35814	The Farmers Trading Co., Shoal Lake.	½ " ..	25	Gorman, Eckert Co., Ltd., London, Ont.	Gormans pure ground cream of tartar.
" 20	" ..	35815	Chapman & Co., Strathclair.	½ " ..	25	E. W. Gillett Co., Ltd., Toronto.	

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CREAM OF TARTAR.

Results of Analysis.

Preliminary Examination.				Determinations.					Calcium Tartrate.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
Starch.	Sulphates.	Phosphates.	Acidity.	Starch.	Kind.	Alumina.	Phosphoric Acid.	Sulphuric Acid.			
Continued.											
None.	None.	None.	502							34723	Genuine, 94 per cent.
"	"	"	484							34724	" 91 "
"	"	"	500							34725	" 94 "
"	"	"	500							34726	" 94 "
"	"	"	486							24727	" 91 "
A. C. LARIVIÈRE, INSPECTOR.											
None.	None.	None.	468						11·13	35801	Genuine, 88 per cent.
"	"	"	478							35802	" 89 "
"	"	"	504							358 3	" 95 "
"	"	"	522							35804	" 98 "
"	"	"	506							35805	" 95 "
"	"	"	506							35806	" 95 "
"	"	"	500							35807	" 94 "
"	"	"	516							35808	" 97 "
"	"	"	504							35809	" 94 "
"	"	"	476							35810	" 89 "
"	"	"	530							35811	" 99 "
"	"	"	534							35812	" 100 "
"	"	"	520							35813	" 98 "
"	"	"	480							35814	" 90 "
"	"	"	525							35815	" 99 "

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost		Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
				Quantity.	Cents.		
1909.							DISTRICT OF CALGARY—
Jan. 18	Cream of Tartar	35351	Wood & Green, Calgary.	½ lb.	25	E. W. Gillett & Co., Ltd., Toronto.	
" 20	"	35352	D. Scharf, Calgary.	½ "	25	E. W. Gillett & Co., Ltd., Toronto	
" 20	"	35353	A. R. Peters, Calgary	½ "	25	G. F. & J. Galt. Co., Winnipeg.	
" 22	"	35354	H. W. Irland, Medicine Hat.	½ "	30	Balfour & Co., Hamilton.	
" 22	"	35355	D. Milne Co., Ltd., Medicine Hat.	½ "	25	Blue Ribbon, Ltd., Winnipeg.	
" 22	"	35356	L. B. Cochrane, Ltd., Medicine Hat.	½ "	20	Gold Standard Mfg. Co., Winnipeg.	
" 22	"	35357	Spencer & Todd, Medicine Hat.	½ "	25	Balfour & Co., Hamilton.	
" 22	"	35358	Stewart Tweed, Ltd., Medicine Hat.	½ "	25	McLarens, Ltd., Hamilton.	
" 29	"	35359	Capital Mercantile Co., Edmonton.	½ "	25	Pure Gold Mfg. Co., Toronto.	
" 29	"	35360	Hudson Bay Co., Edmonton.	½ "	25	E. W. Gillett & Co., Ltd., Toronto.	
" 29	"	35361	Acme Co., Ltd., Edmonton.	"	20	E. W. Gillett & Co., Ltd., Toronto.	
" 29	"	35362	Duncan Bros. & Butler, Edmonton.	½ "	20	E. W. Gillett & Co., Ltd., Toronto.	
" 29	"	35363	Hallier & Aldridge, Edmonton.	½ "	20	E. W. Gillett & Co., Ltd., Toronto.	
" 29	"	35364	J. H. Morris & Co., Edmonton.	½ "	20	E. W. Gillett & Co., Ltd., Toronto.	
" 29	"	35365	C. E. Thompson, Edmonton.	½ "	25	E. W. Gillett & Co., Ltd., Toronto.	
							DISTRICT OF VANCOUVER—
Jan. 14	Cream of Tartar	37536	F. Wright, Vancouver, British Columbia.	¾ lb.	45	E. W. Gillett & Co., Ltd., Toronto.	Absolutely pure.
" 14	"	37537	Atzell & Clark, Vancouver, British Columbia.	½ "	20	Empress Mfg. Co., Vancouver.	
" 14	"	37538	McDowell & Kinnis, Vancouver, B.C.	2 pkgs	20	McLaren Mfg. Co.	Ground pure from selected goods.
" 14	"	37539	Anthony Bros., Vancouver, B.C.	½ lb.	15	E. W. Gillett & Co., Ltd., Toronto.	
" 14	"	37540	Mrs. C. H. Scott, Vancouver, B.C.	½ "	20	W. Braid & Co., Vancouver.	Ground absolutely pure.
" 14	"	37541	M. J. Halpin, Vancouver, B.C.	3 pkgs	25	E. R. Durke, Philadelphia.	
" 14	"	37542	S. F. McCready, Vancouver, B.C.	1 tin.	25	W. Braid & Co., Vancouver.	
" 14	"	37543	The People's Grocery, Fairview, Vancouver.	1 tin.	20	Not known.	Guaranteed to be absolutely pure
" 14	"	37544	Raycraft & Cram, Vancouver.	3 pkgs	30	Mavell & Co., Toronto.	Absolutely pure.

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CREAM OF TARTAR.

Results of Analysis.												
Preliminary Examination.				Determinations.								Remarks and Opinion of the Chief Analyst.
Starch.	Sulphates.	Phosphates.	Acidity.	Starch.	Kind.	Alumina.	Phosphoric Acid.	Sulphuric Acid.	Calcium Tartrate.	No. of Sample.		
R. W. FLETCHER, INSPECTOR.												
None.	None.	None.	532							35351	Genuine,	100 per cent.
"	"	"	498							35352	"	94 "
"	"	"	502							35353.	"	94 "
"	"	"	496							35354	"	93 "
"	"	"	504							35355	"	95 "
"	"	"	514							35356	"	97 "
"	"	"	518							35357	"	98 "
"	"	"	474							35358	"	89 "
"	"	"	490							35359	"	92 "
"	"	"	532							35360	"	100 "
"	"	"	532							35361	"	100 "
"	"	"	532							35362	"	100 "
"	"	"	530							35363	"	99 "
"	"	"	532							35364	"	100 "
"	"	"	532							35365	"	100 "
J. F. POWER, INSPECTOR.												
None.	None.	None.	532							37536	Genuine,	100 per cent.
"	"	"	466						12.06	37537	"	87 "
"	"	"	482							37538	"	90 "
"	"	"	532							37539	"	100 "
"	"	"	476						10·20	37540	"	89 "
"	"	"	530							37541	"	99 "
"	"	"	460						11·13	37542	"	86 "
"	"	"	466						12 00	37543	"	88 "
"	"	"	468						11·00	37544	"	89 "

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
1909.							DISTRICT OF
Jan. 15	Cream of Tartar	37545	Labelle & Co., Vancouver.	2	tins.	40 Wilson Bros., Victoria.	....
" 15	" ..	37546	D. Lam & Co., Vancouver.	3	tins.	30 Empress Mfg. Co., Vancouver.	.....
" 22	" ..	37547	Findlay Bros., Vancouver.	1	pkg.	1 Pure Gold Mfg. Co., Toronto.	Quality guaranteed.
" 22	" ..	37548	A. Nadeau, Mount Pleasant, Vancouver.	½	lb .	20 Not known.....	....
26	" ..	37549	Royal Grocery, Vancouver.	½	" ..	20 Not known.....	Guaranteed to be absolutely pure
" 26	" ..	37550	Hampton Bros., Vancouver.	½	" ..	25 Dalton's or Gillett's.	....
1909.							DISTRICT OF VICTORIA—.
Jan. 20	Cream of Tartar	39259	Windsor Grocery Co., Victoria, B.C.	½	lb..	25 Pioneer Coffee & Spice Mills, Victoria.	Hygenic cream of tartar double refined.
" 20	" .	39260	Copas & Young, Victoria, B.C.	½	" ..	20 E. W. Gillett & Co., Ltd., Toronto.	Gillett's ground cream of tartar.
" 20	" .	39261	W. Speed, Victoria, B.C.	½	" ..	25 E. W. Gillett & Co., Ltd., Toronto.	Gillett's ground cream of tartar.
" 20	" ..	39262	The Vic. Rochdale Co-op. Assn., Ltd., Victoria, B.C.	½	" ..	20 Wilson Bros., Victoria.	... .
" 20	" ..	39263	Wm. B. Hall, Victoria, B.C.	½	" ..	20 Pioneer Coffee & Spice Mills.	....
" 21	" ..	39264	Jalland Bros., Victoria, B.C.	½	" ..	20 Pioneer Coffee & Spice Mills.	....
" 21	" ..	39265	Acton Bros., Victoria, B.C.	½	" ..	20 E. W. Gillett & Co., Ltd., Toronto.	... .
" 21	" ..	39266	L. Dickinson, Victoria, B.C.	3	pkts.	30 E. R. Durkee & Co., New York.	"Gauntlet" Brand.
" 21	" ..	39267	J. Renouf, Victoria, B.C.	½	lb .	25 E. W. Gillett & Co., Ltd., Toronto.	....
" 21	" ..	39268	Bailey & Blomquist, Victoria, B.C.	½	" ..	20 Empress Mfg. Co., Vancouver.	....
" 21	" ..	39269	F. E. Plummer, Victoria, B.C.	½	" ..	20 E. W. Gillett & Co., Ltd., Toronto.	....
" 21	" ..	39270	W. A. Jameson Coffee Co., Victoria, B.C.	½	" ..	15 F. F. Dalley Co., Hamilton.	.. ..
" 23	" ..	39271	Fred. Carne, Victoria, B.C.	½	tin..	25 Pure Gold Mfg. Co., Toronto.	"Pure Gold" quality guaranteed.
" 25	" ..	39272	Dixi H. Ross & Co., Victoria, B.C.	½	"	25 W. A. Jameson, Coffee Co., Ltd., Victoria.	"Victoria" Brand.
" 25	" ..	39273	Harrison & McDonald, Victoria, B.C.	3	pkgs	30 A. Shilling & Co., San Francisco.	"Shilling's" Best

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CREAM OF TARTAR.

Results of Analysis.												
Preliminary Examination.				Determinations.							Remarks and Opinion of the Chief Analyst.
Starch.	Sulphates.	Phosphates.	Acidity.	Starch.	Kind.	Alumina.	Phosphoric Acid.	Sulphuric Acid.	Calcium Tartrate.	No. of Sample.	
VANCOUVER—*Concluded.*											
None.	None.	None.	464	.....	.....	. ..	.....	.....	12·06	37545	Genuine, 87 per cent.
Present.	Present.	" ..	447	6·74	Maize	1·20	.....	11·42	.....	37546	Alum mixture, adulterated.
None.	None.	None.	474	.....	.....	..	....	.....	10·20	37547	Genuine, 89 per cent.
" ..	" ..	" ..	530	.....	.....	....	.....	.....	....	37548	" 99 "
" ..	" ..	" ..	466	.....	...	.....	.. .	.. ...	12·00	37549	" 88 "
" ..	" ..	" ..	530	.....	. ..	. ....	....	.....	...	37550	" 99 "
D. O'SULLIVAN, INSPECTOR.											
None.	None.	None.	472	.....	.....	... ..	.....	...	2·78	39259	Genuine, 89 per cent.
" ..	" ..	" ..	532	.....	.....	.....	.....	.....	. .	39260	" 100 "
" ..	" ..	" ..	532	.....	. ..	.....	.....	...	.....	39261	" 100 "
" ..	" .	" ..	532	.....	.....	.....	....	.....	....	39262	" 100 "
" ..	" ..	" ..	460	... ..	.....	...	.....	....	12·06	39263	" 86 "
" ..	" ..	" ..	464	.....	.. ...	.....	. ..	.....	11·13	39264	" 87 "
" ..	" ..	" ..	530	.....	.....	.....	. . .	....	.....	39265	" 99 "
" ..	" ..	" ..	530	.....	.....	.....	.....	.....	.....	39266	" 99 "
" ..	" ..	" ..	532	.....	... .	.....	.....	.....	. ....	39267	" 100 "
Present.	Present.	None.	462	4·66	Maize	1·20	.....	10·43	.....	39268	Alum mixture, adulterated.
None.	None.	None.	532	.....	.....	.....	. ....	.....	.....	39269	Genuine, 100 per cent.
" ..	" ..	" ..	474	... ..	.. ...	.. ...	.....	.....	10·06	39270	" 89 "
" ..	" .	" .	520	.....	.....	.....	.....	... ..	... .	39271	" 98 "
" .	" ..	" ..	476	.....	.....	.....	.. ..	.....	10·20	39272	" 89 "
" ..	" ..	" ..	528	.....	.....	.....	.....	.....	... ..	39273	" 99 "

APPENDIX B.

BULLETIN No. 181--ARSENIC, AS AN IMPURITY IN DRUGS.

OTTAWA, June 8, 1909.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—In the year 1900, there occurred in Manchester, England, a large number of cases of arsenical poisoning. It was discovered that the poison was present in beer which had been made from commercial glucose. Other sources of arsenic in beer were found in malt which had been dried in kilns to which gases from pyritous coal had access. Further research showed that decided traces of arsenic occurred in many chemical products whose manufacture involved the use of sulphuric acid; it being already known that crude sulphuric acid (oil of vitriol) is usually contaminated with arsenic.

For the information of this department there were examined at that time a number of samples of drugs, as found on the Canadian market, for the purpose of ascertaining whether any of these contained distinct traces of arsenic. While most samples were practically free from the poison, it was found that arsenic was distinctly present in certain sulphates, and particularly in phosphate of soda. The amounts were not so large as to be alarming; but were sufficient to make it impossible to regard these drugs as meeting pharmacopœal requirements.

The present bulletin contains a report upon 448 samples of sulphate of magnesia, sulphate of soda and phosphate of soda, three drugs which are as likely as any to contain arsenic as an impurity. It is satisfactory to find that on the total of 448 samples, 336 contain no arsenic, 86 contain less than one-half of a milligram per hundred grams, twenty less than one milligram and six over one milligram, divided as follows:—

	Arsenic.				Total.
	None.	Less than one-half milligram per hundred grams.	Less than one milligram per hundred grams.	More than one milligram per hundred grams.	
Sulphate of Magnesia	120	26	4	0	150
Sulphate of Soda	99	35	10	6	150
Phosphate of Soda	117	25	6	0	148
	336	86	20	6	448

The British Pharmacopœia fixes the dose of Arsenious Acid at $\frac{1}{60}$ to $\frac{1}{15}$ of a grain, corresponding to 0·001 and 0·004 milligrams.

The maximum single dose for each of the three salts mentioned is 14·2 grams and, as the largest amount of arsenic found is 10·5 milligrams per one hundred grams, it follows that not more than one and one-half milligram could have been absorbed, which would not be considered a dangerous dose, four (4) milligrams being allowed.

I beg to recommend the publication of this report as Bulletin No. 181.

I have the honour to be, sir,
Your obedient servant,

ALP. LEMOINE,
Acting Chief Analyst.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis, Arsenic per 100 Grams.	No. of Sample.
1909.	DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR.								
April 15	Sulphate of Magnesia (Epsom Salts).	33927	A. H. Buckley, Halifax, N.S.	½ lb.	5	National Drug and Chemical Co., Halifax, N.S.		None	33927
" 16	" "	33928	J. R. Rawley, Halifax, N.S.	½ "	5	" "		"	33928
" 16	" "	33929	A. A. Thompson, Halifax, N.S.	½ "	5	" "		"	33929
" 16	" "	33930	M. D. Logan, Halifax, N.S.	½ "	5	" "		"	33930
" 17	" "	33931	Nat. Drug and Chem. Co., Halifax, N.S.	½ "	5	Vendors.		"	33931
" 17	" "	33932	T. M. Power & Son, Halifax, N.S.	½ "	5	National Drug and Chemical Co., Halifax, N.S.		"	33932
" 19	" "	33933	L. C. Gardner, Yarmouth, N.S.	½ "	5	Can. Drug Co., St. John, N.B.		"	33933
" 20	" "	33934	J. D. Clarke, Kentville, N.S.	½ "	5	National Drug and Chemical Co., Halifax, N.S.		"	33934
" 22	" "	33935	A. E. Smith, Truro, N.S.	½ "	5	Unknown.		"	33935
" 23	" "	33936	J. McD. Taylor, Halifax, N.S.	½ "	5	National Drug and Chemical		"	33936
1909.	DISTRICT OF PRINCE EDWARD ISLAND—THEO. MOORE, INSPECTOR.								
April 7	Sulphate of Magnesia (Epsom Salts).	31488	John F. McNeill, Summerside.	½ lb.	5	National Drug and Chemical Co., Halifax, N.S.		None	31488
" 7	" "	31489	McFadyen & McLellan, Summerside.	½ "	5	Can. Drug Co., St. John, N.B.		"	31489
" 8	" "	31490	Sinclair & Stewart, Summerside.	½ "	5	L. Chapnt, Fils & Co, Montreal.		"	31490
" 8	" "	31491	Jardine & Bernard, Kensington.	½ "	5	Can. Drug Co., Halifax		"	31491
" 12	" "	31492	W. H. Pigott, Mount Stewart.	½ "	5	Carnell Bros., Charlottetown.		"	31492

"	13	"	"	..	31493	Mrs. D. Gordon, Georgetown.	½	" ..	6	Northrop & Lyman Co., Ltd., Toronto.	.....	"	31493
"	15	"	"	..	31494	Johnson & Johnson, Charlottetown.	½	" ..	5	Lyman & Son, Montreal....	.....	"	31494
"	15	"	"	..	31495	C. D. Rankin, Charlottetown.	½	" ..	5	" " ..	.....	"	31495
"	15	"	"	..	31496	J. G. Jamieson, Charlottetown.	½	" ..	5	" " ..	.....	"	31496
"	15	"	"	..	31497	M. Duffy & Son, Charlottetown.	½	" ..	8	Nicholson & Brock, Toronto	.....	"	31497

DISTRICT OF NEW BRUNSWICK—J. C. FERGUSON, INSPECTOR.

Mar.	24	Sulphate of Magnesia (Epsom Salts).			29922	Burpee E. Brown, St. John, N.B.	3pkgs.	15	National Drug and Chemical Co., Ltd., St. John, N.B.	.....	Less than 1 milligram....		29922
"	25	"	"	..	29923	R. H. Robb, St. John, N.B.	½ lb..	5	" " ..	.....	None.....		22923
April	6	"	"	..	29924	Chas. A. Burchill, Fredericton, N.B.	½ " ..	5	" " ..	.....	Less than ½ milligram....		29924
"	6	"	"	..	29925	Hunt & McDonald, Fredericton, N.B.	½ " ..	10	" " ..	.....	" ½ "		29925
"	7	"	"	..	29926	C. A. McKeen, Woodstock, N.B.	½ " ..	5	Can. Drug Co., St. John, N.B.	.....	" 1 "		29926
"	14	"	"	..	29927	D. J. Sharp, Sussex, N.B.	½ " ..	5	National Drug and Chemical Co., St. John, N.B.	.....	None.....		29927
"	15	"	"	..	29928	Francis McKay, Moncton, N.B.	½ " ..	5	F. G. Reid & Co., Moncton, N.B.	.. ..	"		29928
"	17	"	"	..	29930	A. Chipman Smith & Co., Bathurst, N.B.	¼ " ..	5	Vendors.....	.....	"		29930
"	19	"	"	..	29931	A. McG. McDonald, Campbellton, N.B.	3pkgs.	15	Howard & Sons, London, Eng.	... .	"		29931
"	15	"	"	..	29939	G. O. Spencer, Moncton, N.B.	½ lb..	5	Can. Drug Co., St. John, N B.	... .	Less than ½ milligram....		29939

DISTRICT OF QUEBEC—E. BELAND, INSPECTOR.

April	20	Sulphate of Magnesia (Epsom Salts).			36701	V. Giroux, Quebec	½ lb..	5	Lymans Ltd., Montreal	.....	None.....		36701
"	20	"	"	..	36702	Laroche & Co., Quebec..	½ " ..	5	Lyman & Sons, Montreal...	.....	"		36702
"	20	"	"	..	36703	R. B. Roger, Quebec....	½ " ..	15	Nat. Drug Co., Montreal...	.....	"		36703
"	20	"	"	..	36704	H. Wellis, Quebec	1 " ..	15	Unknown.....	.....	"		36704
"	20	"	"	..	36705	T. E. Dubé, Quebec.....	1 " ..	10	"	.....	"		36705
"	21	"	"	..	36706	A. L. Jolicoeur, Quebec.	1 " ..	10	Lyman & Sons, Montreal...	.....	"		36706
"	21	"	"	..	36707	F. E. Gauvreau & Frères, Quebec.	1 " ..	10	" " ..	.....	"		36707
"	20	"	"	..	36898	W. Brunnette & Cie, Quebec.	½ " ..	5	Unknown..	.....	"		36898
"	20	"	"	..	36899	L. E. Martel, Quebec....	½ " ..	5	Langlois & Paradis, Quebec.	.....	"		36899
"	20	"	"	..	36900	D. R. Gagnon, Quebec..	½ " ..	10	Lyman Knox, Montreal ...	.....	"		36900

Date of Collection.	Nature of Sample.	No. of Sample.	Name and address of Vendor.	Cost. Quantity	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis, Arsenic per 100 Grams.	No. of Sample.
1909.	DISTRICT OF ST. HYACINTHE—J. C. ROULEAU, INSPECTOR.								
April 21	Sulphate of Magnesia (Epsom Salts).	1034	G. P. Sabourin, St. Jean	½ lb	8	Lymans Ltd., Montreal		None	1034
" 27	" "	1035	Dr. Mignault, Aetonvale	½ "	5	Unknown		"	1035
" 29	" "	1036	Dr. Bellean, Arthabaskaville.	½ "	8	Pharmacie Brunet, Quebec		"	1036
May 5	" "	1037	Pharmacie Chagnon, Sherbrooke.	½ "	5	Lymans Ltd., Montreal		"	1037
" 5	" "	1038	W. J. H. McKindsey, Lennoxville.	½ "	10	Lymans Ltd., Montreal		"	1038
" 11	" "	1039	Dr. Gelinas, St. Guillaume.	½ "	7	Laporte, Martin & Co., Montreal.		"	1039
" 18	" "	1040	Dr. Sylvestre, Sorel	½ "	5	National Drug Co., Montreal.		"	1040
" 25	" "	1041	Dr. J. A. Viger, St. Hyacinthe.	½ "	5	Lymans Ltd., Montreal		"	1041
" 25	" "	1042	Phar. Brodeur, St. Hyacinthe.	½ "	5	National Drug Co., Montreal.		"	1042
" 25	" "	1043	C. H. Welch, Waterloo.	½ "	5	Unknown		"	1043
	DISTRICT OF MONTREAL—J. J COSTIGAN, INSPECTOR.								
April 19	Sulphate of Magnesia (Epsom Salts).	40061	J. A. Godbout, 278 Craig St., Montreal.	½ lb	8	Lymans Ltd		Less than ½ milligram	40061
" 19	" "	40062	Arthur Maillet, 621 Craig St., Montreal.	½ "	5	Unknown		None	40062
" 19	" "	40063	A. E. Gravelle, 542 St. Catherine, Montreal.	½ "	5	"		"	40063
" 23	" "	40064	Dr. J. E. St. Onge, Valleyfield, P.Q.	½ "	5	Lymans Ltd		"	40064
" 23	" "	40065	A. D. Munn, 201 St. Antoine St., Montreal.	½ "	5			Less than ½ milligram	40065
" 26	" "	40066	A. L. Boucher, Joliette.	½ "	5			None	40066

May	4	"	" ..	40067	John T. Lyons Co., Ltd., Montreal.	½	" ..	5	.....	.....	"	40067
"	4	"	" ..	40068	Leo. G. Ryan, Montreal	½	" ..	5	.....	.....	"	40068
"	4	"	" ..	40069	J. A. Asselin, Montreal..	½	" ..	10	Lymans Ltd.....	.....	"	40069
"	4	"	" ..	40070	Louis Fortin, Montreal..	3	pkgs	10	.....	.....	"	40070

DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR.

Mar.	16	Sulphate of Magnesia (Epsom Salts).		22941	Pharmacie Canadienne, Hull, P.Q.	½	lb ..	5	Unknown.....	.....	Less than ½ milligram....	22941
"	19	"	" ..	22942	F. W. Warwick, Buckingham.	½	" ..	5	Lyman Knox, Montreal....	.....	None.....	22942
"	22	"	" ..	22943	Dr. A. Lyon, Shawville..	½	" ..	5	Lymans Ltd., Montreal....	.....	"	22943
"	23	"	" ..	22944	J. Clark, Renfrew, Ont..	½	" ..	5	" " "	.....	Less than ½ milligram....	22944
"	23	"	" ..	22945	J. M. Plaunt, Ltd., Renfrew, Ont.	½	" ..	5	National Drug & Chem. Co., Ottawa.	.....	" ½ " ..	22945
"	24	"	" ..	22946	Jos. Valiquette Co., Ltd. Cor. York & Dalhousie Sts., Ottawa.	½	" ..	5	Provost & Allard, Ottawa..	.....	" ½ " ..	22946
"	24	"	" ..	22947	Jos. P. Valiquette, Clarence & Dalhousie Sts., Ottawa.	½	" ..	5	National Drug & Chemical Co., Ltd., Ottawa.	.....	None.....	22947
"	24	"	" ..	22948	Thos. Payment, Ottawa..	½	" ..	5	Ottawa Drug Co., Ottawa..	.....	"	22948
"	26	"	" ..	22949	E. R. DesRosiers, Rideau St., Ottawa.	½	" ..	5	Ottawa Drug Co., Ottawa..	.....	"	22949
"	26	"	" ..	22950	Estate W. H. Roger, Ottawa.	½	" ..	5	Unknown.....	.....	"	22950

DISTRICT OF KINGSTON—JAS. HOGAN, INSPECTOR.

Mar.	17	Sulphate of Magnesia (Epsom Salts).		39471	H. Skinner, Kingston...	½	lb ..	5	National Drug Co.....	.....	Less than ½ milligram....	59471
"	17	"	" ..	39472	A. P. Chown, " ..	½	" ..	5	Lyman & Sons, Montreal...	.....	" ½ " ..	39472
"	18	"	" ..	39473	W. W. Gibson, " .	½	" ..	5	National Drug Co.....	.....	None.....	39473
"	22	"	" ..	39474	E. C. Clarke, Belleville..	½	" ..	5	Unknown.....	.....	"	39474
"	22	"	" ..	39475	R. Templeton, " ..	½	" ..	5	Lyman & Sons, Montreal...	.....	"	39475
"	22	"	" ..	39476	O. G. Johns, Cobourg...	½	" ..	5	Howard, England.....	.....	"	39476
"	22	"	" ..	39477	A. J. Gould, " ..	½	" ..	5	Lyman & Sons, Montreal...	.....	"	39477
"	22	"	" ..	39478	C. J. Webster, " ..	½	" ..	5	E. G. West, Toronto.....	.....	Less than ½ milligram....	39478
	23	"	" ..	39479	McDermid & Jury, Peterboro.	½	" ..	5	Jury & Lovell, Bowmanville	.....	" 1 " ..	39479
	23	"	" ..	39480	L. A. Payne, Peterboro..	½	" ..	5	Drug Trading Co., Toronto.	.....	" ½ " ..	39480

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DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.									
April 7	Sulphate of Magnesia (Epsom Salts).	36226	Chas. T. Laird, Hamilton	½ lb.	5	J. Winer & Co., Hamilton.		Less than ½ milligram	36226
" 8	" "	36227	R. A. Smith, Newmarket.	½ "	5	Unknown		None	36227
" 13	" "	36228	Wm. Crossland, Barrie.	½ "	5	Drug Trading Co., Toronto		"	36228
" 14	" "	36229	Golding Co., Tottenham	½ "	5	Nat. Drug and Chemical Co., Ltd., Toronto.		"	36229
" 16	" "	36230	G. A. Ramsden, Georgetown.	½ "	5	" " "		"	36230
" 17	" "	36231	Geo. Marshall & Co., Toronto.	½ "	5	The Drug Trading Co., Ltd., Toronto.		"	36231
" 17	" "	36232	J. A. Thompson, Toronto.	½ "	5	Vendor		"	36232
" 17	" "	36233	W. J. Mitchell, Toronto.	½ "	5	Drug Trading Co., Ltd., Toronto.		"	36233
" 19	" "	36234	W. H. Summerfeldt, Toronto.	½ "	5	" "	"Howards"	"	36234
" 19	" "	36235	W. M. Maltby, Toronto.	½ "	5	Lyman Bros. & Co., Ltd., Toronto.		"	36235
DISTRICT OF LONDON—T. KIDD, INSPECTOR.									
Mar. 29	Sulphate of Magnesia (Epsom Salts).	30605	Chas. Aberhart, Seaforth	½ lb.	5	Lyman Bros., Toronto.		None	30605
" 29	" "	30606	W. A. McConnell, Clinton.	1 "	10	National Drug Co., London, Ont.		Less than ½ milligram	30606
" 31	" "	30612	J. J. McEwin, Goderich	¾ "	5	Elliot, Mar & Co., London, Ont.		None	30612
April 7	" "	30631	W. A. McIntyre, St. Mary's.	¾ "	11	National Drug Co., London, Ont.		Less than ½ milligram	30631
" 7	" "	30633	Frank H. Smith, St. Mary's.	¾ "	5	Lyman Bros., Toronto, Ont.		None	30633
" 7	" "	30634	J. McClean, St. Mary's.	¾ "	5	" "		"	30634

"	7	"	" ..	30636	W. R. Burcher " ..	¾	" ..	4	Gorman Eckert, London....	....	"	30636
"	7	"	" ..	30637	A. Beattie & Co., " ..	¾	" ..	4	Unknown.....	....	"	30637
"	7	"	" ..	30638	G. P. McCartney, Stratford.	¾	" ..	4	Kerry, Watson & Co., London, Ont.	....	"	30638
"	7	"	" ..	30639	J. J. Doyle, Stratford...	¾	" ..	5	Unknown.....	....	Less than ½ milligram...	30639

DISTRICT OF WINDSOR—JNO. TALBOT, INSPECTOR.

April	8	Sulphate of Magnesia (Epsom Salts).		34780	N. W. Emerson, London, Ont.	½	lb..	5	National Drug Co.....	....	None.....	34780
"	8	"	" ..	34783	Callard & McLachlan, London, Ont.	½	" ..	10	Unknwon.....	....	"	34783
"	8	"	" ..	34788	A. J. Ormond, London, Ont.	½	" ..	8	National Drug Co.....	.....	Less than ½ milligram ...	34788
"	10	"	" ..	34792	Bruce Wallace, London Ont.	½	" ..	10	"	....	" " ..	34792
"	14	"	" ..	34795	H. J. Foster, St. Thomas	½	" ..	5	" London.	....	None.....	34795
"	14	"	" ..	34798	Fred W. Judd " ..	½	" ..	5	" "	....	Less than ½ milligram....	34798
"	15	"	" ..	35905	R. L. Cowan, Strathroy.	½	" ..	5	Gorman Eckert Co., London, Ont.	....	None.....	35905
"	15	"	" ..	35906	D. Graham " ..	½	" ..	5	A. M. Smith & Co., London, Ont.	.....	"	35906
1	15	"	" ..	35907	Jas. Noble " ..	½	" ..	5	Todhunter & Mitchell, Toronto.	....	"	35907
"	16	"	" ..	35912	J. E. Roome, Glencoe...	½	" ..	5	Unknown.....	....	"	35912

DISTRICT OF MANITOBA—A. C. LARIVIERE, INSPECTOR.

April	19	Sulphate of Magnesia (Epsom Salts).		35836	Sherrin & Co., Carberry.	½	lb..	5	The Bole Drug Co,, Winnipeg.	.....	None.....	35836
"	20	"	" ..	35837	Dunkin's Drug Store, Portage la Prairie.	½	" ..	5	Lyman Sons, Montreal.....	.....	"	35837
"	21	"	" ..	35838	A. M. Sutherland, Elmwood P.O., Winnipeg.	½	" ..	5	Unknown.....	.....	"	35838
"	23	"	" ..	35839	Pulford Drug Store, Carman.	½	" ..	5	"	.. . .	"	35839
"	23	"	" ..	35840	Sanders Drug Store, Carman.	½	" ..	5	Martin, Bole, Wynne Co., Winnipeg.	.....	"	35840
"	24	"	" ..	34841	Elm Creek Drug Store, Elm Creek.	½	" ..	5	" " ..	.....	"	35841
"	26	"	" ..	35842	Cowan & Hays, Deloraine.	½	" ..	5	Unknown.....	.....	"	35842
"	26	"	" ..	35843	C. E. Hasselfield, Deloraine.	½	" ..	5	Lyman Bros., Toronto.....	.....	"	35843
"	27	"	" ..	35844	Napinka Drug Hall, Napinka.	½	" ..	5	Uuknown.....	....	"	35844
"	29	"	" ..	35845	The Clarendon Pharmacy, Winnipeg.	½	" ..	10	The Bole Drug Co., Winnipeg.	....	"	35845

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity	Cost. Cents.	Name and address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Result of Analysis, Arsenic per 100 Grams.	No. of Sample.
DISTRICT OF CALGARY—R. W. FLETCHER, INSPECTOR.									
April 27	Sulphate of Magnesia (Epsom Salts).	35501	G. M. Cawker, Medicine Hat.	½ lb ..	10	Lyman Sons & Co., Montreal		None	35501
" 27	" " ..	35502	C. S. Pringle, Medicine Hat.	½ " ..	10	Lyman Sons & Co., Montreal		"	35502
" 27	" " ..	35503	B. F. Souch, Medicine Hat.	½ " ..	10	Nat. Drug & Chemical Co., Winnipeg.		"	35503
" 29	" " ..	35504	G. H. Graydon, Edmonton.	½ " ..	15	Howard & Son., London, Eng.		"	35504
" 29	" " ..	35505	T. G. Carson, Edmonton.	½ " ..	10	Martin Bole & Wynne		"	35505
" 29	" " ..	35506	A. Archibald, Edmonton.	½ " ..	10	Lyman Sons & Co., Montreal		"	35506
" 29	" " ..	35507	Algonquin Pharmacy, Edmonton	½ " ..	35	A. Macdonald & Co., Edmonton		"	35507
" 29	" " ..	35508	Edmonton Drug Co., Edmonton.	½ " ..	10	Lyman Sons & Co., Montreal		"	35508
" 29	" " ..	35510	J. H. Lives, Edmonton.	½ " ..	10	Unknown		"	35510
" 29	" " ..	35531	E. M. Carpenter Edmonton.	½ " ..	10	Bole Drug Co., Calgary		"	35531
DISTRICT OF VANCOUVER—J. F. POWER, INSPECTOR.									
March 6	Sulphate of Magnesia (Epsom Salts).	37604	M. S. MacDowell, North Vancouver.	½ lb ..	25	Henderson Bros., Vancouver		Less than ½ milligram	37604
" 6	" " ..	37605	Marrett & Reid, Hasting St., Vancouver.	½ " ..	10	" "		" ½ "	37605
" 6	" " ..	37606	Marrett & Reid, Arcade St., Vancouver.	½ " ..	25	" "		None	37606
" 6	" " ..	37607	E. S. Knowlton, Vancouver.	½ " ..	10	" "		Less than ½ milligram	37607
" 6	" " ..	37608	Central Drug Store, Vancouver.	½ " ..	10	" "		" " "	37608

"	25	"	" ..	37609	Owl Drug Store, Vancouver.	½ " ..	15	"	"	....	" " "	37609
"	25	"	" ..	37610	McDuffee Bros., & Co., Vancouver.	½ " ..	10	"	"	.....	None.....	37610
"	25	"	" ..	37611	R. G. Wood, Vancouver.	½ " ..	15	"	"	....	"	37611
"	27	"	" ..	37612	L. G. Henderson, Vancouver.	½ " ..	20	"	"	....	Less than 1 milligram...	37612
"	27	"	" ..	37613	Red Cross Drug Store, Vancouver.	½ " ..	10	"	"	.....	" ½ "	37613

DISTRICT OF VICTORIA—D. O'SULLIVAN, INSPECTOR.

May	11	Sulphate of Magnesia (Epsom Salts).		39331	F. J. Williams, Victoria, B.C.	½ lb ..	15	Henderson Bros., Victoria, B. C.	.....	None.....	39331
"	11	"	" ..	39332	Dean & Hiscocks, Victoria, B.C.	½ " ..	5	" "	....	"	39332
"	11	"	" ..	39333	Wm. Jackson & Co., Victoria, B.C.	½ " ..	15	" "	.....	"	39333
"	12	"	" ..	39334	D. E. Campbell, Victoria, B.C.	½ " ..	10	" "	.....	"	39334
"	12	"	" ..	39335	W. S. Terry, Victoria, B.C.	½ " ..	10	" "	.....	"	39335
"	13	"	" ..	39336	John Cochrane, Victoria, B.C.	½ " ..	10	" "	.....	"	39336
"	13	"	" ..	39337	Cyrus H. Bowes, Victoria, B.C.	½ " ..	10	" "	.....	"	39337
"	13	"	" ..	39338	Geo. A. Fraser, Victoria, B. C.	½ " ..	10	" "	....	"	39338
"	13	"	" ..	39339	B. C. Drug Co., Victoria, B. C.	½ " ..	10	" "	.....	"	39339
"	13	"	" ..	39340	Thos. Shotbolt, Victoria, B. C.	½ " ..	10	Baiss Bros & Stephenson, London, Eng.	.....	"	39340

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Result of Analysis, Arsenic per 100 Grams.	No. of Sample.
1909.	DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR.								
April 16	Sulphate of Soda (Glauber's Salt).	33942	G. A. Burbidge, Halifax, N.S.	½ lb	15	Nat. Drug and Chem. Co., Halifax, N.S.		Less than 1 milligram	33942
" 17	" "	33943	Nat. Drug and Chem. Co., Halifax, N.S.	½ "	5	Nat. Drug and Chem. Co., Montreal.		None	33943
" 17	" "	33944	C. A. Munford, Halifax, N.S.	½ "	10	Nat. Drug and Chem. Co., Halifax.		"	33944
" 19	" "	33945	B. F. Trask, Yarmouth, N.S.	½ "	5	Can. Drug Co., St. John, N.B.		"	33945
" 20	" "	33946	G. C. McDougall, Kentville, N.S.	½ "	5	Unknown		"	33946
" 22	" "	33947	Hub Drug Store, Truro, N.S.	½ "	5	Nat. Drug and Chem. Co., Halifax.		"	33947
" 22	" "	33948	Crowe Bros., Truro, N.S.	½ "	5	" "		"	33948
" 22	" "	33949	Truro Drug Co., Truro, N.S.	½ "	10	" "		"	33949
" 23	" "	33950	E. J. Butler, Dartmouth, N.S.	½ "	5	" "		"	33950
" 23	" "	33951	M. P. McCaffrey, Halifax, N.S.	½ "	10	" "		"	33951
	DISTRICT OF PRINCE EDWARD ISLAND—THEO. MOORE, INSPECTOR.								
April 7	Sulphate of Soda (Glauber's Salt).	38501	John T. McNeill, Summerside.	½ lb	6	Nat. Drug Co., Halifax		None	38501
" 7	" "	38502	P. N. Enman, Summerside.	½ "	10	" "		Less than ½ milligram	38502
" 7	" "	38503	McFadyen & McLellan, Summerside.	½ "	10	Can. Drug Co., St. John		None	38503
" 8	" "	38504	Jardine & Bernard, Kensington.	½ "	8	Nat. Drug Co., Halifax		"	38504
" 12	" "	38505	John Knight, Georgetown.	½ "	5	" "		Less than ½ milligram	38505

"	15	"	"	..	38506	A. W. Reddin, Charlottetown.	½	"	..	10	" " ..	.....	Contains 5·3 milligrams.	38506
"	15	"	"	..	38507	G. E. Hughes, Charlottetown.	½	"	..	5	Lyman Sons & Co., Montreal.	... .	None.....	38507
"	15	"	"	..	38508	McDonald & McKinnon, Charlottetown.	½	"	..	15	Lymans Ltd., Montreal....	....	"	38508
"	15	"	"	..	38509	Reddin Bros., Charlottetown.	½	"	..	8	Lyman Sons & Co., Montreal.	....	Less than ½ milligram. ..	38509
"	15	"	"	..	38510	Gillis & Sons, Charlottetown.	½	"	..	5	Nat. Drug Co., Halifax	....	None.....	38510

DISTRICT OF NEW BRUNSWICK—J. C. FERGUSON, INSPECTOR.

Mar.	25	Sulphate of Soda (Glauber's Salt).			29932	George P. Allen, St. John, N.B.	½	lb	..	10	Unknown..	.. ..	None.....	29932
"	26	"	"	..	29933	Frank E. Porter, St John, N.B.	½	"	..	5	The Nat. Drug and Chem. Co., Ltd., St. John, N.B.	....	Contains 3·2 milligrams..	29933
April	6	"	"	..	29934	C. Fred. Chesnut, Fredericton, N B.	½	"	..	6	Unknown.....	....	Less than ½ milligram...	29934
"	7	"	"	..	29935	The Baird Co., Ltd., Woodstock, N.B.	½	"	..	6	Lymans Ltd., Montreal	....	Less than 1 milligram...	29935
"	7	"	"	..	29936	D. W. C. Stevens, Woodstock, N.B.	½	"	..	10	The Can. Drug Co., St. John, N.B.	.....	Less than ½ milligram...	29936
"	14	"	"	..	29937	G. M. Fairweather, Sussex, N.B.	½	"	..	5	The Nat. Drug Co., Halifax, N.S.	....	None.....	29937
"	15	"	"	..	29938	Dr. O. E. Steeves, Moncton, N.B.	½	"	..	5	The Can. Drug Co., St. John, N.B.	....	"	29938
"	15	"	"	..	29939	J. McD. Cooke, Moncton, N.B.	½	"	..	5	The Nat. Drug Co., St. John, N.B.	....	Less than ½ milligram...	29939
"	16	"	"	..	29941	A. E. Shaw, Newcastle, N.B.	½	"	..	5	The Can. Drug Co., St. John, N.B.	....	None.....	29941
"	19	"	"	..	29953	John White, Campbellton, N.B.	½	"	..	5	The Nat. Drug Co., St. John, N.B.	....	Less than ½ milligram...	29953

DISTRICT OF QUEBEC—E. BELAND, INSPECTOR.

April	20	Sulphate of Soda (Glauber's Salt).			36708	W. Brunette & Cie, Quebec.	½	lb	..	10	Howard's, England	....	None.....	36708
"	20	"	"	..	36709	L. E, Martel, Quebec....	½	"	..	5	Lymans Ltd., Montreal	.....	Less than ½ milligram...	36709
"	20	"	"	..	36710	D. R. Gagnon, Quebec..	½	"	..	10	Lyman Knox, Montreal ...	....	None.....	36710
"	20	"	"	..	36711	V. Giroux, Quebec . .	½	"	..	5	" "	....	Less than ½ milligram...	36711
"	20	"	"	..	36712	Laroche & Co., Quebec.	½	"	..	10	Lyman & Son, Montreal....	.....	None.....	36712
"	20	"	"	..	36713	R. B. Roger, Quebec....	1	"	..	50	Merck, Germany.	.....	"	36713
"	20	"	"	..	36714	H. Wellis, Quebec	1	"	..	35	Nat. Drug Co., Montreal..	.....	"	36714
"	20	"	"	..	36715	T. E. Dubé, Quebec.'....	1	"	..	45	Merck, Germany.....	....	Less than ½ milligram...	36715
"	21	"	"	..	36716	A. L. Jolicoeur, Quebec.	1	"	..	20	Unknown.	....	Less than 1 milligram...	36716
"	21	"	"	..	36717	F. E. Gauvreau, Quebec.	1	"	..	45	Lyman & Son, Montreal ...	....	" " " ...	36717

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis, Arsenic per 100 Grams.	No. of Sample.
1909.	DISTRICT OF ST. HYACINTHE, J. C. ROULEAU, INSPECTOR.								
Apr. 23	Sulphate of Soda (Glauber's Salt.)	1045	Dr. W. Lord, Granby	½ lb.	5	Unknown		None	1045
" 29	" "	1046	J. C. Sutherland, Richmond.	½ "	5	Lymans Ltd., Montreal		"	1046
" 29	" "	1048	Pharmacie Missicotte, Victoriaville.	½ "	5	Unknown		"	1048
May 6	" "	1049	J. F. Flint, Rock Island.	½ "	25	"		"	1049
" 11	" "	1050	Dr. J. A. Gelinas, St. Guillaume,	½ "	13	Chapman & Dart, Mont'l		"	1050
" 18	" "	1051	Dr. Sylvestre, Sorel	½ "	10	W. M. Evans & Co., Montreal.		"	1051
" 25	" "	1052	Dr. J. A. Viger, St. Hyacinthe.	½ "	5	Lymans Ltd., Montreal		"	1052
" 25	" "	1053	Pharmacie St. Jacques, St. Hyacinthe.	½ "	5	" "		"	1053
" 26	" "	1054	Dr. Comeau, Farnham	½ "	10	" "		"	1054
	DISTRICT OF MONTREAL, J. J. COSTIGAN, INSPECTOR.								
Apr. 19	Sulphate of Soda (Glauber's Salt.)	40071	J. A. Godbout, 278 Craig St., Montreal.	½ lb.	7	Lymans Ltd		None	40071
" 19	" "	40072	Arthur Maillet, 621 Craig St., Montreal.	½ "	5	Unknown		"	40072
" 23	" "	40073	A. D. Munn, 201 St. Antoine St., Montreal.	½ "	15		Mercks	"	40073
" 23	" "	40074	Queneville & Guérin, 397 St. Antoine St., Mont'l	½ "	10			Less than 1 milligram	40074
" 26	" "	40075	A. L. Boucher, Joliette, P.Q.	½ "	25	Nat. Drug and Chem. Co., Montreal.		None	40075

"	26	"	" ..	40076	J. T. Gaudet, Joliette, P.Q.	½	" ..	10	.....	.....	.....	"	40076
May	4	"	" ..	40077	John T. Lyons Co., Ltd., Montreal.	½	" ..	10	.. . .	.....	.....	"	40077
"	4	"	" ..	40078	Leo. G. Ryan, Montreal.	½	" ..	5	Howards.....	.....	.....	Less than ½ milligram...	40078
"	4	"	" ..	40079	J. H. Nault, Montreal .	½	" ..	10	"	.....	.....	None.....	40079
"	4	"	" ..	40080	E. Ethier, Montreal.....	½	" ..	5	"	.....	.....	"	40080

DISTRICT OF OTTAWA, J. A. RICKEY, INSPECTOR.

Mar.	19	Sulphate of Soda (Glauber's Salt.)		22951	F. W. Warwick, Buckingham.	½	lb..	5	Unknown.	... .		Less than ½ milligram...	22951
"	19	"	" ..	22952	Dr. Wallace, Buckingham.	½	" ..	5	Lyman Sons & Co., Montreal.	.....		None.....	22952
"	22	"	" ..	22953	Dr. A. Lyon, Shawville..	½	" ..	5	Lymans Ltd., Montreal ...	....		"	22953
"	23	"	" ..	22954	Jas. Clark, Renfrew	½	" ..	5	" " ..	.....		Less than ½ milligram...	22954
"	23	"	" ..	22955	J. M. Plaunt Ltd., Renfrew.	½	" ..	5	Unknown	....		" " ...	22955
"	24	"	" ..	22956	Jos. Valiquette Co., Ltd., cor. York and Dalhousie Sts., Ottawa.	½	" ..	5	Ottawa Drug Co., Ottawa..	. . ..		Contains 7·9 " ...	22956
"	24	"	" ..	22957	Thos. Payment, Ottawa..	½	" ..	5	" " ...	.....		Less than ½ " ...	22957
"	26	"	" ..	22958	E. D. Story, Ottawa....	½	" ..	10	Unknown....	.....		" " ...	22958
"	26	"	" ..	22959	E. R. DesRosiers, Ottawa	½	" ..	5	Ottawa Drug Co., Ottawa..	....		None.	22959
"	26	"	" ..	22960	Estate of W. H. Roger,	½	" ..	10	Unknown	.. ..		Less than ½ milligram...	22960

DISTRICT OF KINGSTON, JAS. HOGAN, INSPECTOR.

Mar.	17	Sulphate of Soda (Glauber's Salt.)		39481	H. Skinner, Kingston...	½	lb..	2	Nat. Drug Co.....	....		Less than ½ milligram...	39481
"	17	"	" ..	39482	W. W. Gibson, Kingston	½	" ..	5	"	.....		Less than 1 " ...	39482
"	22	"	" ..	39483	F. C. Clarke, Belleville..	½	" ..	5	Unknown	....		None.	39483
"	22	"	" ..	39484	R. Templeton, Belleville.	½	" ..	5	Nat. Drug Co.....	....		"	39484
"	22	"	" ..	39485	A. J. Gould, Cobourg...	½	" ..	3	Lyman Bros., Toronto. ...	....		"	39485
"	22	"	" ..	39486	O. S. Johns, Cobourg ...	½	" ..	5	Nat. Drug Co..	....		"	39486
"	23	"	" ..	39487	McDermid & Jury, Peterboro'.	½	" ..	5	Lyman Bros., Toronto.....	....		Less than ½ milligram...	39487
"	23	"	" ..	39488	L. A. Payne, Peterboro'.	½	" ..	3	Drug Trading Co., Toronto.	.....		" " ...	39488
"	23	"	" ..	39489	J. D. Tully, Peterboro'..	½	" ..	5	Unknown	.....		None.	39489
"	23	"	" .	39490	Nugent Drug Co., Peterboro'.	½	" ..	5	Lyman Bros., Toronto.....	....		Less than ½ milligram...	39490

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				Cents.					
1909.	DISTRICT OF TORONTO—H. J. DAGER—INSPECTOR.								
April 7	Sulphate of Soda (Glaubers Salt)	36236	H. Spencer Case, Hamilton.	½	lb..	10 Dom. Drug Co., Hamilton.	.....	Less than ½ milligram...	36236
" 8	" " ..	36237	Rutherford & Co., Aurora	½	" ..	5 National Drug & Chem. Co., Toronto.	.....	" " ...	36237
" 8	" " ..	36238	Norman L. Rogers Co., Ltd., Newmarket.	½	" ..	3 " " "	.....	None.....	36238
" 12	" " ..	36239	W. L. Campbell, Bradford.	½	" ..	2 Unknown	.....	"	36239
" 13	" " ..	36240	D. H. McLaren, Barrie.	½	" ..	5 National Drug and Chem. Co., Hamilton.	.....	"	36240
" 14	" " ..	36241	J. R. Hipwell, Alliston.	½	" ..	2 Drug Trading Co., Toronto.	.....	Less than ½ milligam....	36241
" 14	" " ..	36242	Dr. Jos. Campbell, Tottenham.	½	" ..	3 Shuttleworth Chemical Co., Ltd., Toronto.	.....	None.....	36242
" 16	" " ..	36243	Edward J. Scott, Georgetown.	½	" ..	3 J. Winer & Co., Ltd., Hamilton.	....	"	36243
" 17	" " ..	36244	A. D. Jupp, Toronto.	½	" ..	5 Lyman Bros. & Co., Toronto	...	"	36244
" 19	" " ..	36245	City Hall Drug Store, (F. F. Carly, Mgr.), Tor'to	½	" ..	3 Drug Trading Co., Toronto.	.....	"	36245
	DISTRICT OF LONDON—T. KIDD, INSPECTOR.								
Mar. 25	Sulphate of Soda (Glaubers Salt)	30592	A. B. Petrie, Guelph.	¾	" ..	5 McArthur & Connell, Montreal.	.....	Less than ½ milligram...	30592
" 31	" " ..	30613	H. C. Dunlop, Goderich.	¾	" ..	5 Unknown	.....	" " ...	30613
April 1	" " ..	30622	F. H. Walleys, Wingham	¾	" ..	5 National Drug Co., Toronto.	.....	None	30622
" 3	" " ..	30629	J. Livinston, Listowell.	½	" ..	5 " " "	.....	"	30629
" 7	" " ..	30630	W. A. McIntyre, St. Mary's.	¾	" ..	11 Nat. Drug. Co., London, Ont.	.....	"	30630
" 7	" " ..	30632	Frank H. Smith, St. Mary's.	¾	" ..	5 Lyman Bros., Toronto...	.....	"	30632
" 7	" " ..	30635	J. McLeans, St. Mary's.	¾	" ..	5 " "	.....	"	30635
" 7	" " ..	30640	George J. Waugh, Stratford.	¾	" ..	5 " "	.....	Less than ½ milligram...	30640

"	8	"	"	..	30641	W. B. Barley, Mitchell.	¾	"	..	5	Unknown		None	30641
"	8	"	"	..	30642	S. A. Hodge, Mitchell.	¾	"	..	5	Nat. Drug Co., London, Ont.		"	30642

DISTRICT OF WINDSOR—J. TALBOT, INSPECTOR.

April	8	Sulphate of Soda (Glaubers Salt)			34781	B. A. Mitchell, London, Ont.	½	"	..	5	Nat. Drug Co.		None	34781
"	8	"	"	..	34786	Meek & Vinning, London, Ont.	½	"	..	5	"		"	34786
"	8	"	"	..	34791	E. W. Boyle, London East, Ont.	½	"	..	10	"		"	34791
"	10	"	"	..	34791	C. E. Perry, London, Ont.	½	"	..	10	"		"	34794
"	14	"	"	..	34796	F. P. Reynolds, St. Thomas.	½	"	..	5	"		"	34796
"	14	"	"	..	35902	F. A. Lemon & Co., St. Thomas.	½	"	..	5	Drug Trading Co., Toronto.		"	35902
"	15	"	"	..	35909	H.W. Thompson, Strathroy.	½	"	..	15	Unknown		"	35909
"	15	"	"	..	35910	M. Maude Orchard, Strathroy.	½	"	..	5	Nat. Drug Co., London, Ont.		Less than ½ milligram	35910
"	16	"	"	..	35914	McFarlane & Co., Glencoe.	½	"	..	5	" " "		None	35914
"	16	"	"	..	35915	I. Waldren, London South, Ont.	½	"	..	5	" " "		Less than ½ Milligram	35915
	16	"	"	..	35916	Wm. Robinson, London South, Ont.	½	"	..	5	" " "		None	35916

DISTRICT OF MANITOBA—A. C. LARIVIERE, INSPECTOR.

April	14	Sulphate of Soda (Glaubers Salt)			35846	D. A. Fraser & Co., Winnipeg.	½	lb.	..	5	Unknown		None	35846
"	15	"	"	..	35847	J. R. Robinson, Winnipeg.	½	"	..	20	Mallinckrodt Chem. Works, St. Louis & New York.		Less than ½ milligram	35847
"	15	"	"	..	35848	Colclough & Co., Winnipeg.	½	"	..	35	Unknown		None	35848
"	16	"	"	..	35849	G. E. Rogers, Winnipeg.	½	"	..	20	Nat. Drug and Chem. Co., Montreal.	National	"	35849
	17	"	"	..	35850	F. P. Seale, Winnipeg.	½	"	..	10	Martin, Bole, Wynne & Co., Winnipeg.		"	35850
"	19	"	"	..	35851	Dr. J. M. Eaton & Co., Carberry.	½	"	..	5	The Bole Drug Co., Winnipeg.		"	38851
"	20	"	"	..	35852	Cowan's Drug Store, Portage La Prairie.	½	"	..	5	Unknown		"	35852
"	20	"	"	..	35853	B. M. Canniff, Portage La Prairie.	½	"	..	5	The Bole Drug Co., Winnipeg.		"	35853
"	20	"	"	..	35854	J. R. Hill, Portage La Prairie.	½	"	..	5	The Martin, Bole & Wynne Co., Winnipeg.		"	35854
"	21	"	"	..	35855	Elmwood Drug Store, Elmwood, P.O., W'peg	½	"	..	5	Unknown		"	35855

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1909.	DISTRICT OF CALGARY—R. W. FLETCHER, INSPECTOR.								
April 27	Sulphate of Soda (Glauber's Salt)	35511	C. S. Pringle, Medicine Hat.	½ lb.	10	Lyman Sons & Co., Montreal.		Less than 1 milligram	35511
" 29	" "	35512	G. H. Graydon, Edmonton.	½ "	25	E. Merck, Darmstadt, Ger.		None	35512
" 29	" "	35513	T. G. Carson, Edmonton	½ "	10	Bole Drug Co., Calgary		Less than ½ milligram	35513
" 29	" "	35514	A. Archibald, Edmonton	½ "	10	Lyman Sons & Co., Montreal.		None	35514
" 29	" "	35515	Algonquin Pharmacy, Edmonton.	½ "	35	Unknown		"	35515
" 29	" "	35516	Edmonton Drug Co., Edmonton.	½ "	15	Unknown		"	35516
" 29	" "	35517	J. H. Lives, Edmonton	½ "	15	Mallinckrodt Chem. Works, Germany.		"	35517
" 29	" "	35518	Macdonald's Pharmacy, Edmonton.	½ "	10	Lyman Sons & Co., Montreal.		Less than 1 milligram	35518
" 29	" "	35519	E. M. Carpenter, Edmonton.	½ "	10	" "		None	35519
" 29	" "	35520	Laval Pharmacy, Edmonton.	½ "	15	Bole Drug Co., Winnipeg		"	35520
	DISTRICT OF VANCOUVER—J. F. POWER, INSPECTOR.								
Mar. 26	Sulphate of Soda (Glauber's Salt)	37614	Brown & Beaton, Vancouver.	½ lb.	10	Henderson Bros., Vancouver, B.C.		None	37614
" 26	" "	37615	W. E. Law, Vancouver.	½ "	10	" "		Less than ½ milligram	37615
" 26	" "	37616	C. Muddell, Vancouver.	½ "	25	" "		None	37616
" 26	" "	37617	C. Nelson, Vancouver	½ "	25	" "		Contains 3 milligrams	37617
" 26	" "	37618	Laws Drug Store, Vancouver.	½ "	20	" "		None	37618

"	26	"	"	..	37619	H. Ferguson, Vancouver	½	"	..	20	"	"	....	Less than ½ milligram...	37619
"	26	"	"	..	37620	Fairview Drug Store, Vancouver.	½	"	..	25	Nat. Drug & Chemical Co.		....	None.....	37620
"	26	"	"	..	37621	L. G. Henderson, Mount Pleasant.	½	"	..	20	Henderson Bros., Vancouver, B.C.		.....	Less than ½ milligram...	37621
"	26	"	"	..	87622	Independent Drug Store, Vancouver.	½	"	..	20	"	"	.....	Contains 5 milligrams...	37622
"	26	"	"	..	37623	McDowell, Atkins & Watson, Vancouver.	½	"	..	10	"	"	. ...	Contains 10.5 milligrams.	37623

DISTRICT OF VICTORIA—D. O'SULLIVAN, INSPECTOR.

May	11	Sulphate of Soda (Glauber's Salt)			39341	F. J. Williams, Victoria, B.C.	½	lb	..	25	Nat. Drug & Chemical Co., Montreal, Que.		... .	None.....	39341
"	11	"	"	..	39342	Dean & Hiscocks, Victoria, B.C.	½	"	..	20	Henderson Bros., Victoria, B.C.		.....	"	39342
"	11	"	"	..	39343	Wm. Jackson & Co, Victoria, B.C.	½	"	..	25	Lymans, Ltd., Montreal, Que.		....	"	39343
"	11	"	"	..	39344	D. E. Campbell, Victoria, B.C.	½	"	..	40	Henderson Bros., Victoria, B.C.		....	"	39344
"	11	"	"	..	39345	W. S. Terry, Victoria, B.C.	½	"	..	20	"	"	....	Less than ½ milligram...	39345
"	12	"	"	..	39346	John Cochrane, Victoria, B.C	½	"	..	20	"	"	....	None.....	39346
"	13	"	"	..	39347	Cyrus H. Bower, Victoria, B.C.	½	"	..	20	Lymans, Ltd., Montreal, Que.		....	"	39347
"	13	"	"	..	39348	G. A. Fraser, Victoria, B.C.	½	"	..	20	Henderson Bros., Victoria, B.C.		.....	Less than 1 milligram...	39348
"	13	"	"	..	39349	B. C. Drug Co., Victoria, B.C.	½	"	.	20	"	"	.....	" "	39349
"	13	"	"	..	39350	Thos. Shotbold, Victoria, B.C.	½	"	..	15	"	"	.....	None.....	39350

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1909.	DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR.								
April 16	Phosphate of Soda	33952	C. A. Barnstead, Halifax, N.S.	½ lb.	15	Lyman Sons & Co., Montreal.		Less than 1 milligram	33952
" 17	" "	33953	National Drug and Chemical Co., Halifax, N.S.	½ "	15	Vendors		" ½ "	33953
" 17	" "	33954	R. J. Philips, Halifax, N.S.	½ "	20	Thompson Chemical Co., Baltimore, Md.		None	33954
" 19	" "	33955	J. A. Craig, Yarmouth, N.S.	½ "	20	Mallinckrodt, New York		"	33955
" 19	" "	33956	R. F. Guest, Yarmouth, N.S.	½ "	20	National Drug and Chemical Co., St. John, N.B.		"	33956
" 20	" "	33957	F. C. Churchill, Wolfville, N.S.	½ "	15	Thompson Chemical Co., Baltimore, Md.		"	33957
" 20	" "	33958	A. V. Rand, Wolfville, N.S.	½ "	25	A. Boake Roberts Co., London, Eng.		"	33958
" 22	" "	33959	W. F. Odell, Truro, N.S.	½ "	25	Lyman Sons & Co., Montreal.		"	33959
" 23	" "	33960	Buckley Bros., Halifax, N.S.	½ "	15	National Drug and Chemical Co., Halifax, N.S.		"	33960
" 23	" "	33961	C. E. Huggins, Halifax, N.S.	½ "	15	National Drug and Chemical Co., Halifax, N.S.		"	33961
	DISTRICT OF PRINCE EDWARD ISLAND—THEO. MOORE, INSPECTOR.								
April 15	Phosphate of Soda	38511	P. N. Enman, Summerside.	½ lb.	15	National Drug and Chemical Co. Halifax.		None	38511
" 15	" "	38512	A. W. P. Gourlie, Summerside.	½ "	20	Lyman Knox & Co., Montreal.		"	38512
" 15	" "	38513	Edgar Keir, Kensington.	½ "	15	National Drug Co., Halifax.		"	38513
" 15	" "	38514	Johnson & Johnson, Charlottetown.	½ "	15	Thompson Chemical Co., Baltimore, Md.		"	38514
" 15	" "	38515	C. D. Rankin, Charlottetown.	½ "	12	National Drug and Chemical Co., Halifax.		"	38515
" 15	" "	38516	A. W. Reddin, Charlottetown.	½ "	15	Schoell Kopp Hartford & Hanna Co., New York.		"	38516

"	15	"	"	.....	38517	G. E. Hughes, Charlottetown.	½	"	..	15	National Drug Co., Halifax.	"	38517
"	15	"	"	.....	38518	J. G. Jamieson, Charlottetown.	½	"	..	20	Lyman Sons & Co., Montreal.	"	38518
"	15	"	"	.....	38519	McDonald & McKinnon, Charlottetown.	½	"	..	15	Lymans Ltd., Montreal	"	38519
"	15	"	"	.....	38520	Reddin Bros., Charlottetown.	½	"	..	15	Lyman Sons & Co., Montreal.	"	38520

DISTRICT OF NEW BRUNSWICK—J. C. FERGUSON, INSPECTOR.

Mar.	25	Phosphate of Soda		.....	29942	G. A. Moore, St. John, N.B.	½	lb.		30	E. Merck, Darmstadt	None	22942
"	26	"	"	.....	29943	Wm. Hawker & Son, St. John, N.B.	1	"	..	30	Mallinckrodt Chemical Works, New York.	"	22943
April	6	"	"	.....	29944	R. T. Mack, Fredericton, N.B.	½	"	..	16	The National Drug and Chemical Co., St. John, N.B.	"	22944
"	6	"	"	.....	29945	John M. Wiley, Fredericton, N.B.	½	"	..	20	Unknown	"	22945
"	7	"	"	.....	29946	E. W. Main, Woodstock, N.B.	½	"	..	15	Mallinckrodt Chemical Works, New York.	Less than 2 milligram	22946
"	7	"	"	.....	29947	Garden Bros., Woodstock, N.B.	½	"	..	30	Lyman Sons & Co., Montreal.	" "	22947
"	7	"	"	.....	29949	D. W. C. Stevens, Woodstock, N.B.	1	"	..	30	Thomson Chemical Co., Baltimore, Md., U.S.	None	22949
"	15	"	"	.....	29950	J. McD. Cooke, Moncton, N.B.	½	"	..	20	National Drug and Chemical Co., Montreal.	"	22950
"	16	"	"	.....	29951	Thos. J. Durick, Newcastle, N.B.	½	"	..	25	Mallinckrodt Chemical Works, New York.	'M. C. W.'	22951
"	19	"	"	.....	29952	Thomas Wran, Campbellton, N.B.	½	"	..	15	Lymans Ltd., Montreal.	"	22952

DISTRICT OF QUEBEC—E. BELAND, INSPECTOR.

April	20	Phosphate of Soda		...	36718	W. Brunette & Cie, Quebec.	½	lb.	..	10	Provident Chemical Co., U.S.	None	36718
"	20	"	"	..	36719	L. E. Martel, Quebec	½	"	..	15	National Drug Co., Montreal	"	36719
"	20	"	"	.....	36720	D. R. Gagnon, Quebec	½	"	..	20	Ed. Morin & Cie., Quebec	Less than ½ milligram	36720
"	20	"	"	....	36721	V. Giroux, Quebec	½	"	..	10	Kerry Watson & Co, Montreal.	None	36721
"	20	"	"	.....	36722	Laroche & Corry, Quebec.	½	"	..	40	Lyman & Son.	"	36722
"	20	"	"	.....	36723	R. B. Roger, Quebec	1	"	..	25	Kerry Watson & Co., Montreal.	Less than ½ milligram	36723
"	20	"	"	.....	36724	T. E. Dube, Quebec	1	"	..	45	Unknown	" ½ "	36724
"	20	"	"	.....	36725	C. T. Deslisle, Quebec	1	"	..	25	National Drug Co., Montreal	None	36725
"	20	"	"	.....	36726	A. L. Jolicoeur, Quebec	1	"	..	10	Lyman & Son, Montreal.	"	36726
"	20	"	"	.....	36727	F. E. Gauvreau & Freres, Quebec.	1	"	..	45	Lyman & Son, Montreal.	"	36727

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis, Arsenic per 100 Grams.	No. of Sample.
1909.	DISTRICT OF ST. HYACINTHE—J. C. ROULEAU, INSPECTOR.								
April 21	Phosphate of Soda	1056	Dr. Grey, St. Jean	½ lb.	20	Lymans, Ltd., Montreal	Extra pure crystals, Ph. Bull. 98.	Less than ½ milligram	1056
" 22	" "	1057	G. Dozais, Granby	½ "	35	E. Merck, Germany		None	1057
" 29	" "	1058	J. C. Sutherland, Richmond	½ "	25	Lymans, Ltd., Montreal		"	1058
May 5	" "	1059	Fraser's Drug Store, Sherbrooke.	½ "	15	" "		"	1059
" 5	" "	1060	W. J. H. McKindsey, Lennoxville.	1 "	30	National Drug, Montreal	Pure granular	"	1060
" 25	" "	1061	Dr. J. A. Viger, St. Hyacinthe.	½ "	15	Lymans, Ltd., Montreal		"	1061
" 25	" "	1062	Phar. St. Jacques, St. Hyacinthe.	1 "	25	National Drug, Montreal		"	1062
" 25	" "	1063	Phar. Brodeur, St. Hyacinthe.	½ "	15	" "		"	1063
" 26	" "	1064	A. G. H. Béique, Magog.	½ "	15	Lymans, Ltd., Montreal		"	1064
" 27	" "	1065	Wright & Co., St. Jean.	½ "	15	" "		"	1065
	DISTRICT OF MONTREAL—J. J. COSTIGAN, INSPECTOR.								
April 19	Phosphate of Soda	40081	Arthur Maillet, Montreal	½ lb.	5	Unknown		None	40081
" 19	" "	40082	A. E. Gravelle, Montreal	½ "	13	"		"	40082
" 23	" "	40083	Dr. J. E. St. Onge, Valleyfield. P.Q.	½ "	15			Less than ½ milligram	40083
" 23	" "	40084	Quenneville & Guerin, Montreal.	½ "	15			None	40084
" 26	" "	40085	J. T. Gaudet, Joliette, P.Q.	½ "	35	Lymans, Ltd		"	40085
May 4	" "	40086	J. H. Nault, Montreal	½ "	20	Merck		"	40086

"	4	"	"	.....	40087	E. Ethier, Montreal....	½	" ..	25	Lymans, Ltd.....	.....	40087
"	4	"	"	.....	40088	J. A. Asselin, Montreal.	½	" ..	10	.....	.....	40088
"	1	"	"	.....	40089	Louis Fortier, Montreal	½	" ..	20	.....	"	40089

DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR.

Mar.	16	Phosphate of Soda.....		22961	Pharmacie Canadiènne, Hull.	½	lb ..	15	Unknown.....	.....	None.	22961
"	17	"	"	22962	H. Therien, Hull.....	½	" ..	20	"	.....	"	22962
"	22	"	"	22963	Dr. A. Lyon, Shawville	½	" ..	15	Lymans, Ltd., Montreal ..	.....	"	22963
"	23	"	"	22964	Jas. Clark, Renfrew....	½	" ..	15	" "	.....	"	22964
"	24	"	"	22965	Jos. Valiquette Co., Ltd., Ottawa.	½	" ..	20	National Drug & Chemical Co., Ottawa.	.....	"	22965
"	23	"	"	22966	J. M. Plaunt, Ltd., Renfrew.	½	" ..	20	Lyman Sons & Co., Montreal	.....	Less than ½ milligram...	22966
"	24	"	"	22967	Thos. Payment, Ottawa.	½	" ..	20	Ottawa Drug Co, Ottawa...	.....	"	22967
"	26	"	" ..	22968	E. D. Story, Ottawa....	½	" ..	20	Unknown.....	.....	"	22968
"	26	"	"	22969	E. R. DesRosiers, Ottawa	½	" ..	15	Ottawa Drug Co., Ottawa..	.....	"	22969
"	26	"	"	22970	Estate W. H. Roger, Ottawa.	½	" ..	20	Unknown.....	.....	"	22970

DISTRICT OF KINGSTON—JAMES HOGAN, INSPECTOR.

Mar.	17	Phosphate of Soda.....		39491	H. Skinner, Kingston...	½	lb..	8	National Drug Co.....	.....	None...	39491
"	17	"	"	39492	A. S. Chown, Kingston.	½	" ..	10	Lyman & Sons, Montreal...	.....	Less than ½ milligram...	39492
"	18	"	"	39493	W. W. Gibson, Kingston.	½	" ..	15	National Drug Co	.....	" " " ...	39493
"	22	"	"	39494	F. C. Clarke, Belleville..	½	" ..	15	" "	.....	None.....	39494
"	22	"	"	39495	R. Templeton, Belleville.	½	" ..	10	Lyman & Sons, Montreal...	.....	"	39495
"	22	"	"	39496	O. G. Johns, Cobourg...	½	" ..	15	National Drug Co.....	.....	"	39496
"	22	"	"	39497	A. J. Gould, Cobourg...	½	" ..	15	E. G. West, Toronto.....	.....	Less than ½ milligram...	39497
"	22	"	"	39498	C. J. Webster, Cobourg	½	" ..	15	" "	....	None.....	39498
"	23	"	"	39499	McDermid & Jury, Peterboro.	½	" ..	15	Drug Trading Co., Toronto.	.....	"	39499
"	23	"	"	39500	L. A. Payne, Peterboro..	½	" ..	15	National Drug Co	.....	Less than 1 milligram...	39500

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity	Cost. Cents.	Name and address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis. Arsenic per 100 Grains.	No. of Sample.
1909.			DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.						
April 7	Phosphate of Soda	36246	J. D. Morrison, Hamilton.	½ lb		13 Winer & Co., Hamilton		None	36246
" 8	"	36247	F. E. York, Aurora	½ "		20 National Drug and Chemical Co., Ltd., 'Na-Dru-Co.', Toronto.		"	86247
" 8	"	36248	R. J. Y. Broughton, New Market.	½ "		15 Mallinckrodt Chem. Works, 'M. C. Co.', Lt. Louis, & New York.		Less than 1 milligram	36248
" 12	"	36249	S. Oldham, Branford	½ "		10 W. R. Campbell, Bradford		None	36249
" 13	"	36250	H. G. Robertson, Barrie	½ "		13 Dominion Drug Co., Ltd., Hamilton.		"	36250
" 14	"	36251	Brown Bros., Tottenham	½ "		15 Lyman Bros. & Co., Ltd., Toronto.		"	36251
" 20	"	36252	W. R. Hoar, Toronto	½ "		15 Unknown		Less than ½ milligram	36252
" 20	"	36253	J. H. Hutty, Yonge St., Toronto	½ "		15 Mallinckrodt Chem. Works, 'M. C. Co.', St. Louis, & New York.		None	36253
" 20	"	36254	Chas. J. Stoddart, Toronto.	½ "		15 National Drug Co., Ltd., Toronto.		"	36254
" 20	"	36255	W. H. Andrews, Toronto	½ "		15 Drug Trading Co., Ltd., 'M. C. Co.', Toronto.		"	36255
			DISTRICT OF LONDON—T. KIDD, INSPECTOR.						
Mar. 25	Phosphate of Soda	30594	J. D. McKee, Guelph	½ lb		20 Dom. Drug. Co., Hamilton.		Less than ½ milligram	30594
April 1	"	30619	Walter McKibbon, Wingham.	1 "		35 Drug Trading Co., Toronto.		None	30619
" 2	"	30628	J. Livinston, Listowell	1 "		30 National Drug Co., Toronto.		"	30628
" 13	"	30643	J. H. Schmidt, Berlin	½ "		25 " "		"	30643
" 13	"	30644	A. J. Roose, Berlin	½ "		15 " "		"	30644
" 13	"	30645	Clark Bros., Berlin	½ "		25 Lyman Bros., Toronto		"	30645
" 15	"	30646	Alexander Stewart, Guelph.	½ "		27 Nat. Drug Co., Hamilton.		"	30646

"	15	"	.....	30647	A. Petrie, Guelph	¾	"	..	25	Mallincrokdt Chem. Works, M.C. Co.', St. Louis & N.Y.	.....	"	30647
"	15	"	.....	30648	J. B. Broadfoot, Guelph.	¾	"	..	30	Howard & Sons, 'Howards,' London, Eng.	.....	"	30648
"	15	"	.....	30649	M. Burgardis, Guelph...	¾	"	..	25	Nat. Drug. Co., Hamilton..	.....	"	30649

DISTRICT OF WINDSOR—JNO. TALBOT, INSPECTOR.

April	8	Phosphate of Soda.....		34782	E. L. Guillemont, London.	½	"	..	10	National Drug Co.....	.....	None.....	34782
"	8	"	.....	34787	M. Sumner, London	½	"	..	15	"	.....	"	34787
"	8	"	....	34789	A. D. Bruce.....	½	"	..	15	Unknown	.....	"	34789
"	8	"	.....	34790	H. J. Childs, London East.	½	"	..	15	National Drug Co.....	.....	"	34790
"	10	"	.....	34793	M. B. Percival, London, Ont.	½	"	..	20	"	.....	Less than ½ milligram...	34793
"	14	"	.....	34797	G. H. Small, St Thomas	½	"	..	20	"	.....	None..	34797
"	14	"	.....	35903	Wm. H. Taylor, St. Thomas.	½	"	..	20	National Drug Co., London, Ont.	.....	"	35903
"	15	"	.....	35908	W. H. Stepler, Strathroy.	½	"	..	20	Unknown.....	.....	"	35908
"	16	"	.....	35913	J. A. Scott, Glencoe	½	"	..	20	National Drug Co., London, Ont.	.....	"	35913

DISTRICT OF MANITOBA—A. C. LARIVIERE, INSPECTOR.

April	15	Phosphate of Soda.		35856	West End Drug Stores, Winnipeg.	½	lb	..	15	Unknown	.....	None.....	35856
"	15	"	.....	35857	Baird's Drug Store, Winnipeg.	½	"	..	20	N. C Polson & Co., Kingston	.....	"	35857
"	15	"	....	35858	W. W. McKeague, Winnipeg.	½	"	..	25	Unknown	.....	Less than 1 milligram...	35858
"	15	"	.....	35859	E. Nesbitt, Winnipeg...	½	"	..	25	National Drug Co., Montreal.	.....	" ½ " ...	35859
"	15	"	.....	35860	D. W. Bradshaw, Winnipeg.	½	"	..	25	Unknown	.....	" ½ " ...	35860
"	15	"	....	35861	R. J. Pelton, Winnipeg .	½	"	..	25	The Bole Drug Co., Winnipeg.	.....	None.....	35861
"	16	"	... .	35862	The Gordon Mitchell Drug Co., Winnipeg.	½	"	..	15	Howard & Sons, London, Eng.	.....	Less than ½ milligram...	35862
"	16	"	.....	35863	Pulford Drug Co., Winnipeg.	½	"	..	20	E. Merck, 'Mercks' ', Germany.	.....	" ½ " ...	35863
"	16	"	.....	35864	Poyntz & Co., Winnipeg.	½	"	..	15	Thomson Chem. Co., Baltimore, U.S.	.....	None.....	35864
"	16	"	.....	35865	Connell & Co., Winnipeg.	½	"	..	15	J. Winer & Co., Hamilton..	.....	Less than ½ milligram...	35865

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis, Arsenic per 100 Grams.	No. of Sample.
1909.			DISTRICT OF CALGARY—R. W. FLETCHER, INSPECTOR.						
April 27	Phosphate of Soda	35521	E. M. Cawker, Medicine Hat.	½ lb.	40	Merck & Co., New York		None	35521
" 27	" "	35522	C. S. Pringle, Medicine Hat.	"	"	Lyman, Sons & Co., Montreal.		None	35522
" 27	" "	35523	B. F. Souch, Medicine Hat.	"	"	Nat. Drug & Chem. Co., Winnipeg.		None	35523
" 29	" "	35524	G. H. Graydon, Edmonton.	"	25	Mallinckrodt Chem. Works, Germany.		None	35524
" 29	" "	35525	T. G. Carson, Edmonton.	"	20	J. Winer & Co., Hamilton.		None	35525
" 29	" "	35526	A. Archibald, Edmonton	"	"	Mallinckrodt Chem. Works, Germany.		None	35526
" 29	" "	35527	Edmonton Drug Co., Edmonton.	"	"	Lyman, Sons & Co., Montreal.		None	35527
29	" "	35528	J. H. Lives, Edmonton.	"	25	N. C. Polson & Co., Kingston.		None	35528
29	" "	35529	E. M. Carpenter, Edmonton.	"	"	Lyman, Sons & Co., Montreal.		None	35529
" 29	" "	35530	Laval Pharmacy, Edmonton.	"	15	N. C. Polson & Co., Kingston.		None	35530
			DISTRICT OF VANCOUVER—J. F. POWER, INSPECTOR.						
Mar. 29	Phosphate of Soda	37624	F. J. Mackenzie, New Westminster.	½ lb.	25	J. Winer & Co., Hamilton.		None	37624
" 29	" "	37625	T. A. Muir, New Westminster.	"	"	Henderson Bros., Vancouver		None	37625
" 29	" "	37626	D. S. Curtis, New Westminster.	"	"	Henderson Bros., Vancouver		Less than ½ milligram.	37626
" 29	" "	37627	H. Ryan, New Westminster.	"	"	Henderson Bros., Vancouver		Less than ½ milligram.	37627
" 29	"	37628	J. Houghton, Vancouver	"	"	Henderson Bros., Vancouver		None	37628

"	30	"	"	.....	37629	Manhatten Pharmacy, Vancouver.	"	15	Henderson Bros., Vancouver	Less than ½ milligram.	37629
"	30	"	"	.....	37630	J. B. Boyle (Kitsilano), Vancouver.	"	25	Henderson Bros., Vancouver	None	37630
"	30	"	"	.....	37631	Cameron's Drug Store (Fairview), Vancouver.	"	"	Henderson Bros., Vancouver	Less than ½ milligram.	37631
"	30	"	"	.....	37632	R. M. Morrison, Vancouver.	"	15	Henderson Bros., Vancouver	None	37632
"	31	"	"	.....	37633	Marrett & Reid (English Bay), Vancouver.	"	25	Henderson Bros., Vancouver	None	37633

DISTRICT OF VICTORIA—D. O'SULLIVAN, INSPECTOR.

May	11	Phosphate of Soda		.....	39351	F. J. Williams	½ lb.	25	Mallinckrodt Chem. Works, St. Louis, U.S.A.	None	39351
"	11	"	"	.....	39352	Dean & Hiscocks	"	20	Henderson Bros., Victoria, B.C.	None	39352
"	11	"	"	.....	39353	Wm. Jackson & Co.	"	25	Lymans, Ltd., Montreal	Less than ½ milligram.	39353
"	12	"	"	.....	39354	D. E. Campbell	"	20	Lymans, Ltd., Montreal	None	39354
"	12	"	"	.....	39355	W. S. Terry	"	"	Henderson Bros., Victoria, B.C.	None	39355
"	13	"	"	.....	39356	John Cochrane	"	"	Lymans, Ltd., Montreal	None	39356
"	13	"	"	.....	39357	Cyrus H. Bowes	"	"	Lymans, Ltd., Montreal	Less than ½ milligram.	39357
"	13	"	"	.....	39358	Geo. A. Fraser	"	"	Henderson Bros., Victoria, B.C.	Less than ½ milligram.	39358
"	13	"	"	.....	39359	B. C. Drug Co	"	"	Henderson Bros., Victoria, B.C.	None	39359
"	13	"	"	.....	39360	Thos. Shotbolt	"	15	Mallinckrodt Chem. Works, New York, U.S.A.	None	39360

APPENDIX C.

BULLETIN No. 182—STANDARD FERTILIZERS 1909 AND THE FERTILIZERS ACT, 1909.

Ottawa, July 13, 1909.

W. J. Gerald, Esq.
Deputy Minister of Inland Revenue.

Sir,—I beg to hand you a report upon 182 samples of Commercial Fertilizers sent in as standards to represent the different brands offered on the Canadian market during the season of 1909. This is in accordance with the requirements of section 3 of the Fertilizers Act of 1890.

This will be the last issue of a Bulletin of this description. The Fertilizers Act of 1909 comes into force with the beginning of 1910; and renders the publication of standards unnecessary. In order to give as wide distribution as possible to the new Act, it is published in full in this bulletin.

One of the reasons for discontinuing the publication of standards is the practical impossibility of securing the necessary data in time to be of service to intending purchasers of fertilizers. Reference to the date of registration of the samples now reported will illustrate this.

It will be seen that, with very few exceptions, the samples sent in by manufacturers fully meet the claims made for them. This is as might be expected, and is a matter of much less importance to the farmer than that the samples *as offered in the market* should come up to the claims made for them. By filing with the department a sample containing less fertilizing material than claimed on the label, the manufacturer incurs no penalty, since he does not effect any sale by his action. Of course it is only by unintentional oversight, or by error in mixing that a manufacturer fails to send this department a sample fully up to his guarantee.

It may be well to point out briefly the main features of the new Fertilizers Act.

1. Every fertilizer must be registered, and the registration number must be affixed to every package or parcel sold.

2. The registration number remains constant, for the same fertilizer, from year to year.

3. The manufacturer must attach a statement to every package guaranteeing definite amounts of nitrogen, phosphoric acid and potash.

4. Departmental inspectors will purchase samples of all brands of fertilizers offered on the market. These will be analysed, and the results published annually. Users of fertilizers will be able to know, from this publication, whether the manufacturer lives up to his guarantee or not.

5. Should any purchaser wish to have a special analysis of a registered fertilizer as furnished to him, he may get such analysis at a nominal fee of one dollar. His sample must be taken in such a way as to fairly protect the vendor. The registration number under which sold, enables easy and certain identification to be made.

6. Any purchaser who causes a fertilizer to be specially made to his order, can have such fertilizer analysed, but it will cost him five dollars

7. Fertilizers imported for use, and not for sale, are not inspected under the Act. The importer may have an analysis made, but it will cost him five dollars.

8 In reports of fertilizer analysis, it has been the custom to introduce a statement of the relative value of the fertilizer based upon the content in phosphoric acid, nitrogen and potash. This feature will be discontinued, because of the facts, (1) That trustworthy relative values for the different ingredients of a fertilizer cannot be obtained. (2) that the value of a fertilizer is not solely dependent upon the cost of materials entering into its composition. The character of the crop and the nature of the soil are very important factors in determining the value of a fertilizer in use, and the cost of labour and transportation, as well as the degree of perfection attained in grinding and in mixing are elements of value which are not connotated in the calculation of relative values. (3) That the so-called *relative values* hitherto published have been made use of by salesmen, to the injury of purchasers of fertilizers. This has been done by reading into these numbers meanings which they were not intended to carry.

I may further add, that in spite of every precaution taken by the framers of a Fertilizer Inspection Act, and in spite of the utmost care by an executive department in its administration, true economy in the employment of fertilizers makes demands upon the intelligence of the farmer. It is necessary that he should acquaint himself with the terms used in describing fertilizers: with the needs of plants and with the nature of soils. The man who reads and thinks and who is willing to do some experimental work on his own fields, is the man who can afford to use fertilizers because he will use them intelligently.

The text of the new Fertilizers Act is appended to this report; and fertilizer inspection in 1910 will be carried out under its requirements.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

SESSIONAL PAPER No. 14

8-9 EDWARD VII.—CHAP 16.

An Act respecting Agricultural Fertilizers.

[*Assented to 19th May, 1909.*]

His Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows :—

Short title.

1. This Act may be cited as *The Fertilizers Act, 1909.*

Definitions.

2. In this Act, unless the context otherwise requires,—

"Minister."

(*a*) "Minister" means the Minister of Inland Revenue ;

"Fertilizer."

(*b*) "fertilizer" includes every natural or artificial manure containing phosphoric acid, or nitrogen, or potash, except ordinary stable manure ;

"Registration number."

(*c*) "registration number" means the specific number given by the Minister, under this Act, to each brand of fertilizer ;

"Agent."

(*d*) "agent" means any person whose name has been filed with the Minister as provided in section 4 of this Act ;

"Guaranteed analysis."

(*e*) "guaranteed analysis" means the valuation of a fertilizer by the manufacturer or agent in terms of its content of phosphoric acid, nitrogen and potash.

Distinct brands.

3. Fertilizers shall be considered as of distinct brands when differing either in guaranteed composition, trade mark, name, or in any other characteristic method of marking.

Name of foreign manufacturer's agent or representative in Canada to be filed with Minister.

4. Where the manufacturer of any fertilizer has his factory or chief place of business elsewhere than in Canada, he shall file with the Minister the name of a person resident in Canada, and acceptable to the Minister, or a corporation having its head office in Canada, as the agent or representative of such manufacturer for all the purposes of this Act ; and any notice to, or communication or dealing with, such agent or representative by the Minister shall be effectual for all the purposes of this Act.

Default of filing.

2. In default of such filing, the Minister may take any proceeding or action under this Act *ex parte*, and without any notice to or communication with such person or corporation.

Registration number.

Fee.

5. Every brand of fertilizer offered for sale in Canada shall bear a registration number, which shall be permanently assigned to the particular brand or species of fertilizer for which it is issued. The number shall be granted by the Minister on the application of the manufacturer of such brand of fertilizer, or his agent, and on payment of a fee of two dollars.

Application for registration number.

6. Every application for a registration number shall be accompanied by a statement giving the following particulars :—

(*a*) Name of brand for which the registration number is asked, and trade mark, if any ;

(*b*) Name and address of manufacturer ;

(*c*) Name and address of the person applying for registration ;

(*d*) Guaranteed analysis ;

(*e*) Materials from which the fertilizer is made.

Registration number; how affixed.

Statement required.

7. The registration number must be affixed by the manufacturer, or agent, in a plain and legible manner, to every package of fertilizer sold or offered for sale, and shall constitute an identification of the brand. In addition to the registration number there must be legibly printed, on every package of fertilizer sold, the statement set out in schedule A to this Act. This condition shall be held to be fulfilled if a printed tag, bearing the registration number and the statement required, is securely attached to the package.

Notice of change of formula and application for new number.

8. If a manufacturer elects to change the formula or composition of any fertilizer for which a registration number has been granted, he shall notify the Minister to that effect, and shall apply for a new registration number to designate the new or altered fertilizer, and the former registration number shall be cancelled, and shall not be reissued.

Annual license to sell.

9. No manufacturer of a fertilizer, and no agent of any such manufacturer, shall sell or offer for sale any fertilizer, as defined by section 2 of this Act, unless he has a license under this Act authorizing the sale thereof.

Fee.

2. Upon application of any such manufacturer or his agent, and upon payment of a fee of five dollars therefor, the Minister may grant a license authorizing the sale of such brands of fertilizers as are named in the license.

Period of validity.

3. Such license shall be in such form as the Minister prescribes and shall confer authority to sell during the calendar year in which the license is issued.

Renewal.

4. The Minister may renew any such license from year to year.

Purchaser of registered fertilizer may obtain analysis.

Fee.

10. Any purchaser of a registered fertilizer as delivered to him, by making application for such analysis, accompanied by a sample of the fertilizer of at least one pound weight, and taken in accordance with the directions given in schedule B to this Act and on payment of a fee of one dollar.

Certain officers to act as inspectors.

R.S., c. 133.

11. The officers of Inland Revenue, the officers of Customs, the inspectors and deputy inspectors of weights and measures, and the inspectors of food, drugs and agricultural fertilizers acting under *The Adulteration Act* shall, when required so to do by any regulation made in that behalf by the Governor in Council or the Minister, act as inspectors of fertilizers, and shall procure and submit for analysis samples of fertilizers offered for sale in Canada.

Inspectors to procure samples for analysis.

12. Every inspector of fertilizers shall, whenever instructed by the Minister so to do, obtain for analysis a sample of every fertilizer for sale in the district for which such inspector is appointed.

Analysis and publication of results.

2. Every sample so obtained shall be transmitted to the Minister for submission to the chief analyst for analysis; and the result of all such analyses shall be published annually by the Minister in such manner as he sees fit, together with such other information pertaining to fertilizers as he deems it desirable should be published.

Fertilizers imported for personal use.

Analysis.

13 If any fertilizer is imported for the personal use of the importer, and not for sale, this Act shall not apply thereto, but such importer may secure an analysis of the fertilizer, as delivered to him, on application to the Minister and on payment of a fee of five dollars. The sample submitted must be taken in accordance with the requirements of section 10 of this Act.

Fertilizers made to order, and not intended for sale.

14. This Act shall not apply to fertilizers which are manufactured to the order of the purchaser and are not intended for sale, unless such fertilizers be actually sold by such purchaser, but such purchaser may secure an analysis of the fertilizer as delivered to him, under the conditions stated in section 10 of this Act, on payment of a fee of five dollars.

Analysis.

Penalties for non-compliance with this Act.

Proviso as to evidence of fraudulent intent.

15. Every manufacturer or agent, or purchaser in the case provided for in the next preceding section, who sells or offers or exposes for sale any fertilizer in respect of which the provisions of this Act have not been complied with; or who sells or offers or exposes for sale any fertilizer which does not contain the percentage of constituents mentioned in the manufacturer's certificate accompanying such fertilizer, shall be liable in each case to a penalty not exceeding fifty dollars for the first offence, and for each subsequent offence to a penalty not exceeding one hundred dollars and, in default of payment of such penalty, to imprisonment for thirty days. Provided that a deficiency of one half of one per cent of the ammonia or its equivalent in nitrogen or nitric acid, or of phosphoric acid, or of the

potash claimed to be contained in the fertilizer, shall not be considered as evidence of fraudulent intent, if the total value of the fertilizer in fertilizing materials is substantially equivalent to the guaranteed statement made by the manufacturer or agent. Forgery of certificate, registration number, etc.

16. Every person who forges, or utters or uses knowing it to be forged, any manufacturer's certificate, registration number, or certificate of analysis required under this Act, is guilty of an indictable offence, and is liable to imprisonment for a term not exceeding two years, with or without hard labour. Penalty. Unlawful use of certificate, registration number, etc.

17. Every person who wilfully applies to any fertilizer a certificate, or tag, or registration number given in relation to any other package or lot of fertilizer, every person who sells an unregistered fertilizer, and every person who lowers the fertilizing value of a registered fertilizer by mixing any other substance therewith, after the said fertilizer has been placed upon the market by the manufacturer or agent, shall be liable, on summary conviction, to a penalty not exceeding five hundred dollars, and in default of payment to imprisonment for a term not exceeding twelve months. Penalty. False certificate. Penalty.

18 Every person who gives a false certificate in writing with respect to a fertilizer sold by him as a principal or agent, shall be liable on summary conviction to a penalty not exceeding five hundred dollars, and in default of payment to imprisonment for a term not exceeding twelve months. Application of fees and penalties.

19. All fees paid and penalties recovered under this Act shall form part of the Consolidated Revenue Fund of Canada. R.S. c. 132 repealed.

20. *The Fertilizers Act*, chapter 132 of the Revised Statutes, 1906, is repealed. Commencement of Act,

21. This Act shall come into force on the first day of January, one thousand nine hundred and ten.

SCHEDULE A.

STATEMENT TO BE ATTACHED TO PACKAGE.

1. *(Name of brand.)*
2. *(Registration number.)*
3. *(Name and address of manufacturer.)*
4. *(Analysis, as guaranteed by the manufacturer.)*
5. Notice. Any purchaser may have an analysis made by the Department of Inland Revenue, on payment of one dollar. Samples must be taken in conformity with the regulations. For regulations address the Deputy Minister of Inland Revenue, Ottawa.

SCHEDULE B.

INSTRUCTIONS FOR TAKING SAMPLES OF FERTILIZERS TO BE SUBMITTED FOR ANALYSIS IN ACCORDANCE WITH SECTION 10.

Samples of fertilizer submitted by a purchaser for analysis must be inclosed in glass jars or bottles, and properly sealed. The samples must be taken in the presence of the vendor or of his representative.

Process of Sampling.

In lots of five tons, or less, portions shall be drawn from each separate package, and from at least ten packages; or if less than ten packages are present, all shall be sampled. In lots of over five tons, at least ten per cent of the packages shall be sampled. The portions so taken shall be thoroughly mixed in the presence of the parties interested, and from this mixture the sample sent to the Minister is to be taken: and must bear the signature of vendor and purchaser; and at the same time a duplicate sample is to be left with the party whose goods are inspected, subject to the call of the manufacturer or agent.

Date When Received.	Designation.	Number of Sample.	Name and Address of Manufacturer.	By Whom Sent.	From what Materials Produced.	—
1909.						
Jan. 25	Tankage	2269	Davies Packing Co., Ltd., Harriston, Ont.	Manufactures	Blood, bone, etc.	Guaranteed contents. Contents as found...
" 25	Unground Tankage.	2270	Wm. Davies Co., Ltd., Toronto.	"	"	Guaranteed contents. Contents as found...
" 25	Concentrated Tankage.	2271	"	"	"	Guaranteed contents. Contents as found...
" 25	Ground Bone	2272	"	"	Bone	Guaranteed contents. Contents as found..
" 25	Dried Blood	2273	"	"	Blood	Guaranteed contents. Contents as found...
" 25	Standard Tankage.	2274	The Laing Packing Co., Montreal.	"	Tankage	Guaranteed contents. Contents as found...
Feb. 3	Sulphate of Ammonia.	2275	W. A. Freeman Co., Ltd., Hamilton, Ont.	"	Sulphate of ammonia.	Guaranteed contents. Contents as found...
" 3	Nitrate of Soda.	2276	"	"	Nitrate of soda.	Guaranteed contents. Contents as found...
" 3	Sulphate of Potash.	2277	"	"	Sulphate of potash	Guaranteed contents. Contents as found...
" 3	Muriate of Potash.	2278	"	"	Muriate of potash.	Guaranteed contents. Contents as found...
" 3	Pure Bone Meal	2279	"	"	Phosphate, bone, blood, tankage, sulphuric acid, muriate of potash, sulphate of potash, ammonia, sulph., nitrate of soda.	Guaranteed contents Contents as found...
" 3	Phosphate Powder.	2280	"	"	"	Guaranteed contents. Contents as found...
" 3	Phosphate Rock, ground.	2281	"	"	"	Guaranteed contents. Contents as found...
" 3	Tankage Manure	2282	"	"	"	Guaranteed contents. Contents as found...
" 3	Potato Manure.	2283	"	"	"	Guaranteed contents. Contents as found...
" 3	Tobacco Manure	2284	"	"	"	Guaranteed contents. Contents as found...
" 3	Sure Growth Manure.	2285	"	"	"	Guaranteed contents. Contents as found...
" 3	Celery and Early Vegetable Manure.	2286	"	"	"	Guaranteed contents. Contents as found...
" 3	Bone and Potash	2287	"	"	"	Guaranteed contents. Contents as found ..
" 3	Lawn Dressing .	2288	"	"	"	Guaranteed contents. Contents as found...

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STANDARD FERTILIZERS.

Results of Analysis.											
Nitrogen, p.c.		Phosphoric Acid, per cent.									
Total, including that of Nitric Acid or Ammonia if Present.	Total, calculated as Ammonia.	Soluble in Water.	Citric Soluble.	Insoluble.	Total.	Total available.	Potash.	Moisture.	Relative value per ton of 2,000 lbs.	Number of Sample.	Remarks and Opinion of the Chief Analyst.
p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	$ c.		
9·19	11·16	... ..	.....	.....	10·14	.....	.....	8·59	.....	2269	
9·04	10·98	Trace.	9·61	1·04	10·65	9·61	.....	8·15	41·62	....	Up to guarantee.
7·14	8·67	.....	...	.	12·92	.	.....	16·06	.....	2270	
7·60	9·23	Trace.	10·65	2·50	13·15	10·65	.....	16·40	38·30	...	"
12·22	14·84	....	.....	...	.....	..	.....	8·43	....	2271	
12·74	15·47	Trace.	1·05	0·25	1·30	1·05	.....	6·40	44·55	...	"
4·05	4·92	....	.....	.....	23·41	...	.	6·12	.....	2272	
4·13	5·02	.....	15·40	9·30	24·70	15·40	.....	4·90	33·77	....	"
10·99	13·34	.....	.....	...	....	.....	... ..	19·23	.....	2273	
10·63	12·90	.....	4·22	0·90	5·12	4·22	....	18·95	41·05	...	"
6·51	7·90	.....	.....	... ..	12·58	.....	.....	6·20	.....	2274	
6·57	7·97	0·35	9·43	3·22	13·00	9·78	... ..	5·65	34·10	....	"
20·59	25·00	.....	....	.... .	.....	.....	.....	.....	70·00	2275	
20·84	25·30	.....	.... .	.....	.....	.....	.....	6·65	70·86	...	"
15—16	18·21	.....	.....	.....	.....	.....	.....	.....	51 00	2276	"
	19·43										
15·85	19·24	.....	.....	.....	.....	.....	.....	0·90	53·89	...	"
.....	.....	....	.....	.....	.....	.....	§	.....	.....	2277	
....	*	.....	.....	.. ...	.....	.....	51·44	0·55	51·44	....	"
... .	.....	.....	.....	.....	... ..	.....	‖	.....	.....	2278	
.....	†	.....	.....	.. ...	.....	... ..	50·68	0·25	50·68	.	"
2·47—4·12	3—5	... ..	.....	.....	20—25	.....	.....	.....	.....	2279	
3·00	3·64	.....	18·80	6·50	25·30	18·80	.....	11 00	32·83	....	"
.....	.....	.....	.....	....	13—16	.....	.....	... ..	.....	2280	
0·39	0·48	.. ..	7·43	7·90	15·33	7·43	.....	13·90	11·87	....	"
.. . .	.....	.....	.....	.....	‡	.....	.....	.....	.....	2281	64·18 per cent phosphate and
0·21	0·26	.....	6 90	22·50	29 40	6·90	.....	4·15	15·05	....	up to guarantee.
4·12—5·77	5—7	.....	.....	. ..	12—15	.....	.....	.....	.....	2282	Up to guarantee.
6·57	7·97	0·58	12·30	3·12	16·00	12·88	.....	4·85	37·50	....	"
2·47—3·29	3—4	..	.....	.....	8—10	.....	5—7	.....	.....	2283	
3·02	3·67	2·08	7·15	1·97	11·20	9·23	6·75	13·95	27·97	...	"
2·47—3·29	3—4	.....	... ..	.....	7—9	.....	4—5	... ..	.....	2284	
3·21	3 89	2·45	7·28	2·02	11·75	9·73	5·10	14·80	27·57	.....	"
2·89—4 12	3½—5	.....	.....	.....	8—10	.....	3—4	....	.....	2285	
3 28	3·98	2·30	7·43	2·12	11·85	9 73	3·50	15·00	26 22	....	"
4·12 –5·77	5—7	.....	.....	. .	9—10	.....	5—7	....	.....	2286	
4·70	5·83	2·20	6·45	1·50	10·15	8·65	7·20	13·75	33 36	....	"
1·65—2·47	2—3	.....	..	....	9—10	.....	6—8	....	.....	2287	
2·51	3·54	2·15	7·15	2·10	11·40	9·30	7·49	13·50	27 10	....	"
2·47—4·12	3—5	....	....	.....	9—10	.....	4—4½	.....	.. ..	2288	
3 36	4 08	6·02	0·28	4·80	11·10	6·30	4·25	11·50	24 65	....	"

* 95·12 per cent sulphate of potash. † 80·27 per cent muriate of potash. ‡ 65-72 per cent phosphate.
§ 90 per cent as sulphate. ‖ 80 per cent as muriate.

Date When Received.	Designation.	Number of Sample.	Name and Address of Manufacturer.	By Whom Sent.	From what Materials Produced.	—
1909.						
Feb. 3	Fertilizer.	2289	Davies, Ltd., Montreal.	Manufacturers..	Blood, bone and proteid matter.	Guaranteed contents Contents as found..
" 10	Thomas Phosphate Powder (ground basic slag).	2290	Late H. & E. Albert, England.	Anglo-Canadian Chem. Co., St. John, N.B.	. . . . .	Guaranteed contents Contents as found..
" 10	" .	2291	" ..	" ..	....	Guaranteed contents Contents as found..
" 10	Albert's Horticultural Manure.	2292	Late H. & E. Albert, Biebrich, Germany.	" ..	... .	Guaranteed contents Contents as found..
" 10	Potato Fertilizer No. 1.	2293	Late H. & E. Albert, England.	" ..	....	Guaranteed contents Contents as found..
" 17	Nitrate of Soda..	2294	The Nitrate Agencies Co., Toronto	The Nitrate Agencies Co., Toronto.	... .	Guaranteed contents Contents as found..
" 17	Basic Slag	2295	Anglo Continental Guano Works (late Ohlendorff's)	H. H. McNutt, Lower Truro, N.S.	....	Guaranteed contents Contents as found..
" 17	No. 1 Superphosphate.	2296	Capelton Chemical & Fertilizer Co., Buckingham, P.Q.	Capelton Chem. and Fert. Co., Buckingham, P.Q.	Acidulated phosphate rock, tankage, sulphate of ammonia, sulphate and muriate of potash.	Guaranteed contents Contents as found..
" 17	Royal Canadian.	2297	" ..	" ..	" ..	Guaranteed contents Contents as found..
" 17	Reliance	2298	" .	" ..	" ..	Guaranteed contents Contents as found..
" 17	Victor.	2299	" ..	" ..	" ..	Guaranteed contents Contents as found..
" 17	Swift's Lowell Cereal Fertilizer.	2300	Swift's Lowell Fert. Co., Boston	Manufacturers..	Blood, meat, bone, bone black, bone phosphate, nitrate of soda or ammonia sulphate and sulphate or muriate of potash.	Guaranteed contents Contents as found..
" 17	Swift's Lowell Empress Brand	2301	" ..	" .	" ..	Guaranteed contents Contents as found..
" 17	Swift's Lowell Bone Fertilizer	2302	" ..	" ..	" ..	Guaranteed contents Contents as found..
" 17	Swift's Lowell Animal Brand.	2303	" .	" ..	" ..	Guaranteed contents Contents as found..
" 17	Swift's Lowell Potato Manure	2304	" ..	" .	" ..	Guaranteed contents Contents as found..
" 17	Swift's Lowell Potato Phosphate.	2305	" ..	" ..	" .	Guaranteed contents Contents as found..

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STANDARD FERTILIZERS.

Results of Analysis.											
Nitrogen, p.c.		Phosphoric Acid, per cent.									
Total, including that of Nitric Acid or Ammonia if Present.	Total, calculated as Ammonia.	Soluble in Water.	Citric Soluble.	Insoluble.	Total.	Total available.	Potash.	Moisture.	Relative value per ton of 2,000 lbs.	Number of Sample.	Remarks and Opinion of the Chief Analyst.
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	$ c.		
6·20	7·53	.....	.....	...	13·47	.....	... ...	3·51	.....	2289	
6·26	7·60	0·20	9·35	2·50	12·05	9·55	.....	3·80	32 56	..	Slightly below guarantee in phosphoric acid.
....	.....	.. ..	...	...	17—20	... ...	... ...	.....	.....	2290	
.....	.....	.....	13·40	4·10	17·50	13·40	... ...	0·15	15 97	....	Up to guarantee.
....	.....	.....	...	.....	14—16	.....	.....	.....	.....	2291	
....	.....	.....	11 15	4·30	15·45	11·15	.....	.....	13 55	....	"
12·20	14·81	11·11	.....	..	.....	.....	15·00	... ...	69 81	2292	
11·82	14·35	11·80	None.	None.	11·80	11·80	13·62	2 75	67 97	....	Essentially up to guarantee.
2·00	2 43	7·00	*	.....	.....	.....	7·00	.....	22 20	2293	
3·46	4·20	6·58	1·52	0 60	8·70	8·10	6·05	10·50	27 56	....	Up to guarantee.
$Na\ NO_3$=95·12	.....	....	....	.....	... ...	.....	3·40	.....	2294		
16·07	19·52	... ...	..	...	.....	.....	.....	1·20	54 64	....	97·56 per cent nitrate of soda. Up to guarantee.
.....	....	.....	16·50	.....	17·95	†	.....	.....	.....	2295	
....	.....	.....	13·25	4·65	17·90	13·25	.....	0·15	15 97	....	Up to guarantee in total phosphoric acid.
..... .	.....	...	.....	...	10—14	.....	.....	.....	.....	2296	Up to guarantee.
....	.....	10 05	2·58	1·87	14·50	12·63	.....	8·75	15 46	....	
3·29—4·11	4—5	.	.....	.....	9—11	.....	5—6	.....	.....	2297	
4·12	5·00	9·65	0·17	1·30	11 12	9 82	6 27	10·15	32 44	....	"
1·65—2·47	2—3	.....	.....	...	6—7	... ..	2—3	... ..	.....	2298	
2·77	3·66	5·00	3·45	1·17	9·62	8·45	2·89	5·40	22 45	....	"
1·65—2·47	2—3	.....	...	...	7—9	.....	3—4	.....	.....	2299	
2·69	3·26	6·25	1·12	1·35	9·12	7·77	3·70	6·20	21 98	....	"
0·82	1	.....	.....	1	8	7	1	.....	11 79	2300	
1·22	1·48	5·78	2·50	0·92	9·20	8·28	1·32	6·90	15 43	....	"
1·24	1·5	.....	.....	1	8	7	2	.....	14·22	2301	
1·19	1·45	6·60	1·95	0·75	9·30	8·55	2·31	6·11	16 65	.. .	"
1·65	2	....	.....	...	9	8	3	...	17 71	2302	
1·41	1·71	5 68	3·10	1·42	10·20	8·78	3·25	8·65	18 70	...	
2·47	3	. ..	.	.....	10	8	4	.....	21 80	2303	"
2·32	2·80	6·50	2·16	1·04	9·70	8·66	4·51	8·25	22 89	...	
1·65	2	.....	.....	.....	8	7	4	....	17 61	2304	"
1·61	1 95	4·75	2·60	0·80	8·15	7·35	4·24	6·85	18 51	....	
2·47	3	.....	.....	.....	9	8	6	.....	23 50	2305	"
2·25	2·74	6·45	2·33	1·12	9·90	8·78	6·15	8·40	24 44	....	

* Soluble. † Fineness, 89·90

Date When Received.	Designation.	Number of Sample.	Name and Address of Manufacturer.	By Whom Sent.	From what Materials Produced.	—
1909.						
Feb. 17	Swift's Potato Grower.	2306	Swift's Lowell Fert. Co., Boston.	Manufacturers.	Blood, meat, boneblack, bone phosphate, nitrate of soda, or sulphate of ammonia and sulphate or muriate of potash.	Guaranteed contents Contents as found..
" 17	Swift's Superior Fertilizer.	2307	" ..	" ..	" ..	Guaranteed contents Contents as found..
" 17	Swift's Lowell Ground Bone.	2308	" ..	" ..	" ..	Guaranteed contents Contents as found...
" 17	Essex XXX Fish and Potash.	2309	Essex Fertilizer Boston.	" ..	Fish, meat, bone, boneback, bone phosphates, sodium nitrate or sulphate of ammonia, and sulphate or muriate of potash.	Guaranteed contents Contents as found...
" 17	Essex Market Garden and Potato Manure.	2310	" ..	" ..	" ..	Guaranteed contents Contents as found...
" 17	Essex Complete Manure for Potatoes, Roots & Vegetables.	2311	" ..	" ..	" ..	Guaranteed contents Contents as found...
" 17	Essex Ground Bone.	2312	" ..	" ..	....	Guaranteed contents Contents as found...
" 17	New England Peerless Fertilizer.	2313	New England Fert. Co., Boston.	" ..	Blood, meat, bone boneblack, bone phosphate, sodium, nitrate or sulphate of ammonia, and sulphate or muriate of potash.	Guaranteed contents Contents as found...
" 17	N. E. Potato Fertilizer.	2314	" ..	" ..	" ..	Guaranteed contents Contents as found..
" 17	N. E. Corn and Grain fertilizer.	2315	N. E. Fertilizer Co.	" ..	" ..	Guaranteed contents Contents as found...
" 17	N. E. Potato Grower.	2316	" ..	" ..	" ..	Guaranteed contents Contents as found...
" 17	N. E. Ground Bone.	2317	" ..	" ..	....	Guaranteed contents Contents as found...
" 18	Bradley's X L Superphosphate of Lime.	2318	Am. Agr. Chem. Co.	Boston Sales Dept.	Bone black, animal bone, phosphatic guano, dried fish, meat or blood, nitrate of soda or sulphate of ammonia, sulphate and or muriate of potash, sulphuric acid.	Guaranteed contents Contents as found..
" 18	Bradley's Potato Fertilizer.	2319	" ..	" ..	" ..	Guaranteed contents Contents as found..
" 18	Bradley's Eclipse Phosphate for all Crops.	2320	" ..	" ..	" ..	Guaranteed contents Contents as found..

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STANDARD FERTILIZERS.

Results of Analysis.											
Nitrogen, p.c.		Phosphoric Acid, per cent.									
Total, including that of Nitric Acid or Ammonia if Present.	Total, calculated as Ammonia.	Soluble in Water.	Citric Soluble.	Insoluble.	Total.	Total available.	Potash.	Moisture.	Relative value per ton of 2,000 lbs.	Number of Sample.	Remarks and Opinion of the Chief Analyst.
p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	$ c.		
3·29	4	..	.....	.....	7	6	10	....	28 09	2306	
3·59	4·25	4·20	2·05	0·75	7·00	6·25	10·36	7·60	29 78	....	Up to guarantee.
3·71	4·5	.....	.....	1	8	7	10	.....	30 61	2307	
3·63	4·40	5·60	2·16	0·82	8·58	7·76	9·58	9·05	31 26	....	"
2·47	3	.....	.....	.....	25	.....	.. ..	.....	.....	2308	
2·55	3·09	.....	20·00	7·45	27·45	20·00	.....	4·40	32 90	....	"
2·06	2·50	....	8	1	9	.. ..	3	.....	19 10	2309	
1·78	2·16	5·75	3·20	1·00	9·95	8·95	2·99	8·25	19 76	....	"
2·06	2·50	8	.. .	1	9	.....	5	.....	21 90	2310	
1·92	2·33	6·55	1·85	0·80	9·10	8·30	4·87	7·50	21 53	....	"
3·29	4	6	.....	1	7	.....	10	.....	28 69	2311	
3·39	4·11	3·85	2·08	0·77	6·70	5·93	10·27	6·85	28 93	....	"
2·47	3	... .	.....	.....	23·00	10	.....	..	23 30	2312	
2·52	3·06	.. ..	19·45	8·05	27·50	19·45	.....	4·25	32 38	...	"
0·82	1	.....	....	1	8	7	1	..	11 79	2313	
0·99	1·20	4·35	2·80	0·95	8·10	7·15	1·11	5·00	13 06	....	"
1·65	2	....	.....	....	8	7	4	....	17 61	2314	
1·57	1·80	4·90	3·18	0·77	8·85	8·08	4·36	6·00	19 31	....	"
1·24	1·5	.....	....	....	8	7	2	.....	14 22	2315	
0·99	1·21	4·30	3·00	0·55	7·85	7·30	1·96	4·65	13 95	..	"
2·47	3	.....	.....	.....	7	6	10	.....	25 30	2316	
2·44	3·03	5·35	2·70	1·15	9·20	8·05	11·51	6·90	29 54	....	"
2·47	3	.....	.....	.....	23	.....	.....	....	.....	2317	
2·45	2·98	.....	19·25	8·15	27·40	19·25	.. .	4·25	31 25	....	"
2·06—2·88	2·5-3·5	5—6	3—4	2—3	10—13	8—10	1·5-2·5	.....	18 40	2318	
2·13	2·58	6·75	3·45	2·25	12·45	10·20	1·60	11·25	21 41	...	"
2·06—2·88	2·5-3·5	5—6	3—4	2—3	10—12	8—10	3—4	.....	19 90	2319	
1·91	2·34	7·10	3·55	2·35	13·00	10·65	2·77	13·90	22 39	....	"
1·03—2·50	1·25-3	6—8	2—4	2—3	10—15	8—12	2—3	....	15 50	2320	
1·55	1·88	7·25	2·85	2·65	12·75	10·10	2·72	11·15	20 62	....	"

Date When Received.	Designation.	Number of Sample.	Name and Address of Manufacturer.	By Whom Sent.	From what Materials Produced.	—
1909.						
Feb. 18	Bradley's Complete Manure with 10 per cent Potash.	2321	Amer. Agr. Chem. Co.	Boston Sales Dept.	Bone, bone black, animal bone, phosphatic guano, dried fish, meat or blood, nitrate of soda or sulphate of ammonia, sulphate and or nitrate of potash, and sulphuric acid.	Guaranteed contents Contents as found. . .
" 18	Bradley's Eureka Fertilizer.	2322	" . .	" . .	" . .	Guaranteed contents Contents as found. . .
" 18	Bradley's Farmers' New Method Fertilizer.	2323	" .	" .	" . .	Guaranteed contents Contents as found. . .
" 18	Bradley's High Grade Fertil'r with 10 per cent Potash.	2324	" . .	" .	" . .	Guaranteed contents Contents as found. . .
" 18	Read's Practical Special.	2325	" . .	" .	" . .	Guaranteed contents Contents as found. . .
" 18	Read's Potato Manure.	2326	" . .	" . .	" . .	Guaranteed contents Contents as found. . .
" 18	Read's High Grade Farmers Friend Superphosphate.	2327	" .	" . .	" . .	Guaranteed contents Contents as found. . .
" 18	Read's Fish Bone Potash.	2328	" . .	" . .	" . .	Guaranteed contents Contents as found. . .
" 18	Quinnipiac Climax Phosphate for all Crops.	2329	" . .	" . .	" . .	Guaranteed contents Contents as found. . .
" 18	Soluble Pacific Guano.	2330	" . .	" . .	" . .	Guaranteed contents Contents as found. . .
" 18	Pacific Potato Special.	2331	" . .	" . .	" . .	Guaranteed contents Contents as found. . .
" 18	Pacific Nobsque.	2332	" . .	" . .	" . .	Guaranteed contents Contents as found. . .
" 18	Standard Fertilizer.	2333	" . .	" . .	" . .	Guaranteed contents Contents as found. . .
" 18	Clark's Cove Great Planet Manure.	2334	. .	" . .	" . .	Guaranteed contents Contents as found. .
" 18	Cumb'rland's potato Fertilizer.	2335	" . .	" . .	" . .	Guaranteed contents Contents as found. . .
" 18	Darling's Blood, Bone & Potash.	2336	" . .	" . .	" . .	Guaranteed contents Contents as found. .
" 18	Tucker's Imperial Bone Superphosphate for All Crops.	2337	" .	" . .	" . .	Guaranteed contents Contents as found. . .

SESSIONAL PAPER No. 14

STANDARD FERTILIZERS.

Results of analyses.											
Nitrogen, p.c.		Phosphoric Acid, per cent.									
Total, including that of Nitric Acid or Ammonia if Present.	Total, calculated as Ammonia.	Soluble in Water.	Citric Soluble	Insoluble.	Total.	Total available.	Potash.	Moisture.	Relative value per ton of 2,000 lbs.	Number of Sample.	Remarks and Opinion of the Chief Analyst.
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	$ c.		
3·5—4·13	4—5	4—6	2—4	1—2	7—10	6—8	10—12	.....	29 20	2321	
3·28	3 98	5·80	2·00	1·50	9·30	7·80	9·17	8·85	29 93	....	Up to guarantee.
1·03—2·5	1·25-3	6—8	2—4	2—3	10—15	8—12	2—3	.....	15 50	2322	
1·61	1 95	7·00	2·43	2·92	12·35	9·43	2·37	10·35	19 79	....	"
1·03—2·5	1·25-3	6—8	2—4	2—3	10—15	8—12	2—3	.....	15 50	2323	
1·57	1·80	7·15	2·73	2·62	12·50	9·88	2·40	10·60	20 11	....	"
2·4—3	3—4	5—6	1—2	1—2	7—10	6—8	10—12	.....	25 56	2324	
1·92	2·33	3·50	3·43	3·92	10·85	6·93	9·39	9·55	25 07	....	"
0·82—1·65	1—2	2—3	2—3	1—2	5—8	4—6	8—10	.....	15 69	2325	
1·09	1·19	6·00	2·63	2·12	10·75	8·63	7·39	13·00	21 82	....	
2·4—3	3—4	5—6	1—2	1—2	7—10	6—8	10—12	.. ..	25 56	2326	
1·92	2·33	3·40	3 23	3·67	10·30	6 63	9·97	9·55	25 23	....	"
3·5—4·13	4—5	4—6	2—4	1—2	7—10	6—8	10—12	.....	29 20	2327	
3 28	3·98	5·85	2·08	1·22	9·15	7 93	9·07	9·25	29 90	....	
2—3	2·4-3·6	3—4	1—2	1—2	5—7	4—6	4—6	...	15 80	2328	
1·69	2 06	5·20	2·88	2·57	10·65	8·08	4·11	12·75	20 03	....	"
1·03—2·50	1·25-3	6—8	2—4	2—3	10—15	8—12	2—3	.....	15 50	2329	
1·67	2·02	7·05	2·90	2 90	12·85	9·95	2·32	10·20	20 52	...	"
2·06—2·88	2·5 3·5	5—6	3—4	2—3	10—13	8—10	1·5-2·5	.....	18 40	2330	
1·86	2·26	6·70	3·38	2·02	12·10	10·08	1·55	11·50	20 24	....	"
2·06—2·88	2·5-3·5	5—6	3—4	2—3	10—13	8—10	3—4	.....	19 90	2331	
1·95	2·36	7·40	3·08	2·22	12·70	10·48	2·78	13·75	22 34	....	"
1·03—2·15	1·25-3	6—8	2—4	2—3	10—15	8—12	2—3	...	15 50	2332	
1·68	2·04	7·30	2·98	3·07	13 35	10 28	2 29	10·35	20 96	....	"
2 06—2·88	2·5-3·5	5—6	3—4	2—3	10—13	8—10	1·5-2·5	.....	18 40	2333	
1·83	2·23	6·70	3·38	2·17	12·25	10·08	1·54	11·70	20 17	....	
3·3—4 12	4—5	6—8	2—3	1—2	9—13	8—11	7—8	.....	27 92	2334	
3·14	3·81	7·50	2·48	1·32	11·30	9·98	6·48	12 80	29 28	...	"
2·06—2·88	2·5-3·5	5—6	3—4	2—3	10—13	8—10	3—4	...	19 90	2335	
1·86	2·26	7·10	3·25	2·55	12·90	10·35	2·72	14 30	21 90	...	"
4·10—5	5—6	5—7	2—3	1—2	8—12	7—10	7—8	....	29 44	2336	
4·20	5·40	5·30	3·55	1·30	10·15	8·85	6·54	11·15	31 47	....	"
1·03—2·50	1·25-3	6·8	2·4	2 3	10·15	8·12	2—3	.....	15 50	2337	
1·58	1·92	7·05	2·75	3·00	12·80	9·80	2·41	10·75	20 17	..	"

Date When Received.	Designation.	Number of Sample.	Name and Address of Manufacturer.	By Whom Sent.	From what Materials Produced.	
1910.						
Feb. 20	Bradley's Superphosphate with Potash for Orchards.	2338	Amer. Agr. Chem. Co.	Boston Sales Dept.	Bone black and phosphatic guano, muriate and orsulphate of potash.	Guaranteed contents Contents as found...
" 20	Bradley's Alkaline Bone with Potash.	2339	" ..	" ..	" ..	Guaranteed contents Contents as found...
" 20.	Bradley's Fine Ground Bone.	2340	" ..	" ..	....	Guaranteed contents Contents as found...
" 20	Pacific Fine Ground Bone.	2341	" ..	" ..	....	Guaranteed contents Contents as found...
" 20.	Cumberland Fine Ground Bone.	2342	" ...	" ..	....	Guaranteed contents Contents as found...
" 26.	Tankage..	2343	Montreal Stock Yards Co, Montreal.	Manufacturers..	Cattle blood, cattle and hogs' entrails, hogs' hair, hogs' toes, sheep and calves' entrails, sheep's heads, calves' heads, &c.	Guaranteed contents Contents as found...
" 2.	Tankage E.....	2344	Harris Abattoir Co., Toronto.	" ..	Dried blood, bones, tankage, potash and mechanical filler.	Guaranteed contents Contents as found. .
" 2.	Tankage F.....	2345	" .	" ..	" ..	Guaranteed contents Contents as found...
....	" G.....	2346	" ..	" ..	" ..	Guaranteed contents Contents as found...
.....	" H.....	2347	" ..	" ..	" ..	Guaranteed contents Contents as found...
.....	" I.. ...	2348	" ..	" ..	" ..	Guaranteed contents Contents as found ..
March 2	" J.....	2349	" ..	" ..	" ..	Guaranteed contents Contents as found...
" 2.	" K.....	2350	" ..	" ..	" ..	Guaranteed contents Contents as found...
" 2.	Special Potash Mixture.	2351	Am. Agr. Chem. Co.	" ..	Animal matter, blood, bone and (tankage), mineral phosphates, potash, and all treated with sulphuric acid.	Guaranteed contents Contents as found. .
" 2	High Grade Perash Compound	2352	" ..	" ..	" ..	Guaranteed contents Contents as found...
" 2.	Crocker's New York Special Phosphate.	2353	" ..	" ..	" ..	Guaranteed contents Contents as found...
" 2.	Crocker's Wheat and Corn Fertilizer.	2354	" ..	" ..	" ..	Guaranteed contents Contents as found. .

SESSIONAL PAPER No. 14

STANDARD FERTILIZERS.

Results of Analysis.											
Nitrogen, p.c.		Phosphoric Acid, per cent.									
Total, including that of Nitric Acid or Ammonia if present.	Total, calculated as Ammonia.	Soluble in Water.	Citric Soluble.	Insoluble.	Total.	Total available.	Potash.	Moisture.	Relative value per ton of 2,000 lbs.	Number of Sample.	Remarks and Opinion of the Chief Analyst.
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	$ c.		
.. . .	...	.....	.. ....	2–3	15–18	13–15	1–2	.....	15 90	2338	
0·25	0·31	10·80	1·85	2·05	14·70	12·65	1·13	12·65	17 59	....	Up to guarantee.
....	.....	6–7	5–6	1–2	12–15	11–13	2–3	.....	15 00	2339	
0 21	0 25	10·00	2·98	2·82	15·80	12·98	1·80	12·15	18 63	....	"
2·5—3·25	3—4	.....	.....	.....	21—23	.. ..	....	.....	.. ..	2340	
2·75	3·32	.....	16·15	8·05	24·20	16·15	. .	6·65	29 53	....	"
2 5—3·25	3—4	. ..	.....	....	21—23	... .	.....	...	.. .	2341	
2 79	3·35	.....	17·65	6·65	24·30	17·65	.....	6·65	30 90	...	"
2·5—3·25	3—4	....	.....	.. ..	21—23	. ...	. ..	...	...	2342	
2·84	3·45	.....	16·95	7·25	24·20	16·95	....	6·75	30 48	....	"
9·38	11·39	. ....	.....	.....	3·06	.....	.... .	14·46	.....	2343	
9·38	11·39	.....	2·60	0·45	3·05	2·60	.....	6·75	34 89	....	"
4·2	5·1	.....	.....	.....	11·54	....	8	.....	... .	2344	
3·68	4·47	.. .	11·75	1·20	12·95	11·75	8·65	7·40	34 45	....	"
4 3	5·2	.....	.....	.....	12·85	.	4	.....	.....	2345	
4·08	4·96	.. ..	10·75	2·00	12·75	10·75	2·40	8·75	28·70	....	Below guarantee in potash.
5·4	6·6	.....	.....	.. .	11·00	.....	5	.....	.....	2346	
5·32	6·46	.. .	11·45	1 20	12·65	11·45	2·52	9·25	33 56	....	"
3·08	3·74	. .	.....	.. .	10·79	....	6·5	....	.....	2347	
3·01	3·69	.....	10 60	2·00	12·60	10·60	3·77	8·90	26 37	....	"
1·84	2·23	.....	...	...	12·32	.....	5	...	.....	2348	
1·88	2·28	....	11·10	3·10	14 20	11·10	2 71	7·25	22 24	. ..	"
2·41	2·93	.....	.....	.....	14·38	. ....	3	...	.....	2349	
2·32	2 82	.....	13·73	2·27	16·00	13·73	3·06	7·25	26 73	....	Up to guarantee.
2·31	2 83	.....	.....	.....	11·86	.....	10	.....	... .	2350	
2·28	2 77	. ....	11·58	1 52	13·10	11·58	8·24	8·00	29 19	..	Below guarantee in potash.
0·82—1·65	1—2	7—8	2—3	1—2	10—13	9—11	7—8	.....	20 69	2351	
1·18	1·43	7·30	1·13	3·27	11·70	8·43	8·15	5·40	23 15	....	Up to guarantee.
1·65—2·47	2—3	6—7	2—3	1—2	9—12	8—10	10—11	.....	25 31	2352	
1·58	1·92	7·15	1·08	2·02	10·25	8·23	10·79	9·90	26 54	.. .	"
.....	. . .	8–9	2–3	1–2	11–14	10–12	8–9	....	20 10	2353	
. .....	.....	7·65	2·25	1·25	11·15	9·90	7·76	6·00	19 79	....	"
2·06—2·88	2·5-3·5	6—7	2—3	1—2	9—12	8—10	1·5-2·5	.....	18 20	2354	
2·16	2·62	6·35	2·98	1 77	11·10	9·33	1·78	12·30	20 55	....	"

Date When Received.		Designation.	Number of Sample.	Name and Address of Manufacturer.	By Whom Sent.	From what Materials Produced.	—
1909.							
Mar.	2	Crocker's Complete Manure.	2355	Am. Agr. Chem. Co.	Manufacturers..	Animal matter blood, bone and tankage, mineral phosphates, potash and all treated with sulphuric acid.	Guaranteed contents Contents as found...
"	2	Crocker's Special Potato Manure	2356	" ..	" .	" ..	Guaranteed contents Contents as found...
"	2	Crocker's Best Potato Fertilizer.	2357	" ..	" ..	" ..	Guaranteed contents Contents as found...
"	2	Bradley's New Method Fertilizer.	2358	" ..	" ..	" ..	Guaranteed contents Contents as found...
"	2	Bradley's B. D. Sea Fowl Guano.	2359	" ..	" ..	" ..	Guaranteed contents Contents as found...
"	2	Bradley's Complete Manure for Potatoes & Vegetables.	2360	" ..	" ..	" ..	Guaranteed contents Contents as found. .
"	2	Complete Manure.	2361	" ..	" ..	" ..	Guaranteed contents Contents as found...
"	2	Michigan Carbon Fruit and Vine Fertilizer.	2362	" ..	" ..	" ..	Guaranteed contents Contents as found ..
"	2	Michigan Carbon Complete Fertilizer.	2363	" .	" ..	" ..	Guaranteed contents Contents as found...
"	2	Michigan Carbon Defiance Fertilizer.	2364	" ..	" ..	" ..	Guaranteed contents Contents as found...
"	2	Homestead High Grade Garden and Vegetable Fertilizer.	2365	" ..	" ..	" ..	Guaranteed contents Contents as found...
"	2	Standard Bone & Potash Fertilizer.	2366	" .	" ..	" ..	Guaranteed contents Contents as found...
"	2	Homestead Corn & Grain Producer.	2367	" ..	" ..	" ..	Guaranteed contents Contents as found...
"	2	Virginia Tobacco Fertilizer.	2368	" ..	" ..	" ..	Guaranteed contents Contents as found...
"	2	General Blood, Bone and Potash Fertilizer.	2369	" ..	" ..	" ..	Guaranteed contents Contents as found...
"	2	Best Potato and Garden Blood and Tankage Fertilizer.	2370	" ..	" ..	" ..	Guaranteed contents Contents as found...
"	3	Campbells Fertilizer. No. 1.	2371	The Executors of Robt. Campbell Esq., Manchester, Eng.	Blackie Bros., Halifax, N.S.	Bones, kainit, superphosphate rape meal, ammonium sulphite (sic).	Guaranteed contents Contents as found...
	3	Fertilizer No. 2..	2372	" ..	" ..	Superphosphate, ammonium sulphite (sic), kainit.	Guaranteed contents Contents as found...

STANDARD FERTILIZERS.

Results of Analysis.											
Nitrogen, p. c.		Phosphoric Acid, per cent.									
Total, including that of Nitric Acid or Ammonia if Present.	Total, calculated as Ammonia.	Soluble in Water.	Citric Soluble.	Insoluble.	Total.	Total available.	Potash.	Moisture.	Relative value per ton of 2,000 lbs.	Number of Sample.	Remarks and Opinion of the Chief Analyst.
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	$ c.		
0·82—1 65	1—2	6—7	2—3	1—2	9—12	8—10	4—5	.....	16 49	2355	
1·05	1 28	6·73	1·20	3·27	11·20	7 93	3·77	11·15	17 72	....	Up to guarantee.
3·29—4·11	4—5	6—7	2—3	1—2	9—12	8—10	7—8	.....	27 89	2356	
3·19	3·88	4·85	4·18	1·67	10·70	9·03	7·53	11 55	29 29	....	"
1·65—2·47	2—3	6—7	2—3	1—2	9—12	8—10	10—11	.....	25 31	2357	
1 65	2·01	7·48	1·27	1·90	10·65	8·75	10·30	9·50	26 85	....	"
0·82—1·65	1—2	6—7	2—5	1—2	9—12	8—10	2—3	.....	14 49	2358	
1·09	1·33	7·48	1·80	2 22	11·50	9 28	2·13	7·80	17 46	....	"
2·06—2·88	2·5-3·5	6—7	2—3	1—2	9—12	8—10	1·5-2·5	.....	18 20	2359	
2·13	2·58	6·45	3·01	1·87	11·33	9·46	1·63	11·65	20 48	....	"
3·29—4·11	4—5	6—7	2—3	1—2	9—12	8—10	7—8	.....	27 89	2360	
3·26	3·96	4·85	4 56	1·60	10·95	9·35	7·51	11·00	29 84	.. .	"
2·06—2·88	2·5-3·5	6—7	2—3	1—2	9—12	8—10	3—4	.....	19 70	2361	
1·82	2·21	5·25	3·88	1 65	10·78	9·13	3·59	8·40	20 84	...	"
1·65—2·47	2—3	6—7	2—3	1—2	9—12	8 -10	10—11	.....	25 31	2362	
1·57	1·90	6·75	2·23	1·87	10 85	8·98	10·92	9·25	27 37	...	"
1·65—2·47	2—3	6—7	2—3	1—2	9—12	8—10	4—5	. ..	19 31	2363	
1 83	2 23	6·45	2·56	1·72	10·73	9·01	4·49	12 15	21 78	...	"
1·65—2·47	2—3	6—7	2—3	1—2	9—12	8—10	2—3	.....	17 31	2364	
1·86	2·26	8·15	1·25	2·35	11·75	9·40	2·16	12·40	19 34	....	"
1·65—2·47	2—3	6—7	2—3	1—2	9—12	8—10	6—7	.....	21 31	2365	
1·60	1·94	7 40	0·95	2·20	10·55	8·35	6·95	11·00	22 97	....	"
1·65—2·47	2—3	6—7	2—3	1—2	9—12	8—10	4—5	....	19 31	2366	
1·78	2·16	6·50	3 18	1·77	11·45	9·68	4 28	12·00	22·16	....	"
1·65—2·47	2—3	6—7	2—3	1—2	9—12	8—10	2—3	.....	17 31	2367	
1·95	2·36	7·80	1·46	2·42	11·68	9·26	2 25	12·25	20·57	..	"
1·65—2·47	2—3	6—7	2—3	1—2	9—12	8—10	4—5	.....	19 31	2368	
1·82	2·21	5·95	2·68	1·72	10·35	8·63	4·23	13·00	21·02	...	"
1·65—2·47	2—3	6—7	2—3	1—2	9—12	8—10	10—11	.....	25 31	2369	
1·61	1·95	7 05	2·03	1·77	10·85	9·08	10 10	10·40	26·80	....	
1·65—2·47	2—3	6—7	2—3	1—2	9—12	8—10	6—7	.....	21 31	2370	
1·61	1·95	7·30	1·98	2·15	11·43	9·28	7·39	9·50	24·45	....	
4 59	5·57	*	.....	.....	†	.....	5·75	‡	....	2371	
4 90	5·95	3·95	2·48	1·05	7·48	6·43	4·26	6·90	28·80	....	"
3·43	4 17	**	....	....	. .	. ...	8·60	‡	.....	2372	
4·02	4·88	7·60	0·82	0·48	8·90	8·42	3 77	9·15	27·60	....	"

7·5 p. c. sol. phosphate. † 7·5 p. c. phosphate. ‡ Sulphate. ** 13 p. c. phosphate.

Date When Received.		Designation.	Number of Samples.	Name and Address of Manufacturer.	By Whom Sent.	From what Materials Produced.	
1909.							
Mar.	3	Special Potato Manure.	2373	Alex Cross & Sons, Ltd., Glasgow, Scotland.	R. A. Beckwith, Amherst, N.-E.	Bone phosphate, nitrates and muriate of potash.	Guaranteed contents Contents as found. . .
"	3	Scotia Basic Slag Phosphate.	2374	" . .	" .	....	Guaranteed contents Contents as found. . .
"	5	Bone Dust	2375	....	Rufus R. Gage, Hamilton, Ont.	Bone.	Guaranteed contents Contents as found. . .
"	5	Great Eastern High Grade Potato Manure	2376	Am. Agr. Chem. Co., G. Eastern Fertilizer Branch	Manufacturers. .	Bone, black, animal bone, phosphatic guanos, dried fish, meat or blood, sod, nitrate or sulphate of ammonia, sulphate and or muriate of potash, sulphuric acid.	Guaranteed contents Contents as found. . .
"	5	G. E. Potato Manure.	2377	" . .	" . .	" . .	Guaranteed contents Contents as found. . .
"	5	G. E. General Fertilizer.	2378	" .	" . .	" . .	Guaranteed contents Contents as found. . .
"	5	G. E. Grass and Oats Fertilizer	2379	" .	" . .	Bone black, and or phosphatic guanos, muriate and or sulphate of potash.	Guaranteed contents Contents as found. . .
"	5	Aroostook Complete Manure.	2380	" . .	" . .	Bone black, animal bone, phosphatic guanos, dried fish, meat or blood, soda, nitrate or sulphate of ammonia, sulphate and or muriate of potash, sulphuric acid.	Guaranteed contents Contents as found. . .
"	5	Peerless Potato Manure.	2381	" . .	" . .	" . .	Guaranteed content Contents as found. . .

SESSIONAL PAPER No. 14

STANDARD FERTILIZERS.

Results of Analysis.												Remarks and Opinion of the Chief Analyst.
Nitrogen, p.c.		Phosphoric Acid, per cent.										
Total, including that of Nitric Acid or Ammonia if Present.	Total, calculated as Ammonia.	Soluble in water.	Citric Soluble.	Insoluble.	Total.	Total available.	Potash.	Moisture.	Relative value per ton of 2,000 lbs.	Number of Sample.		
p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	$ cts.			
2·88—4·11	3·5—5	....	....	††	....	‡‡	6—9	....	....	2373		
3·64	4·42	7·85	3·60	1·55	13·00	11·45	5·78	1·90	32·20	....	Up to guarantee.	
....	.....	.....	.....	.....	16—20	....	.....	....	.....	2374		
.. ..	.....	.....	15·18	6·62	21·80	15·18	.....	0·20	18·68	....		"
2·47	3	.. ..	....	.....	23	....	....	....	.....	2375		
2·70	3·28	.....	17·75	6·25	24·00	17·75	.....	3·50	29·58	....		"
3·20—4·15	4—5	4—6	2—4	1—2	7—10	6—8	10—12	....	28·18	2376		
3·39	4·11	6·45	1·98	1·20	9·63	8·43	8·90	8·15	30·70	....		"
2·06—2·88	2·5-3·5	5—6	3—4	2—3	10—13	8—10	3—4	....	19·90	2377		
2·04	2·48	7·70	4·06	1·37	13·13	11·76	3·09	11·40	24·14	....		"
0·82—1·65	1—2	5—7	3—4	2—3	10—14	8—11	4—5	....	16·69	2378		
1·12	1·36	6·63	3·35	2·30	12·28	9·98	3·49	11·10	19·62	....		"
. .. .	.....	6—7•	5—6	1—2	12—15	11—13	2—3	.....	15·00	2379		
.....	.....	10·33	3·43	2·07	15·83	13·76	1·76	12·15	18·55	....		"
2·4—3	3·4	5—6	1—2	1—2	5—10	6—8	10—12	....	25·56	2380		
2·38	2·89	3·67	3·39	3·54	10·60	7·06	9·21	8·50	26·50	...		"
3·3—4·12	4—5	6—8	2—3	1—2	9—13	8—11	7—8	.....	27·92	2381		
3·16	3·84	7·40	3·85	1·50	12·75	11·25	6·27	11·35	30·58	....		

† 4—6 p.c. insol. bone phosphate. ‡‡ 15—18 Sol. phosphate.

Date When Received.	Designation.	Number of Samples.	Name and Address of Manufacturer.	By whom Sent.	From what materials Produced.	—
1909.						
Mar. 9	Special Potato Phosphate.	2382	Nova Scotia Fertilizer Co., Halifax.	Manufacturers.	Bone, char. bone, dried blood, tankage, meat, fish bone, phosphates, sulphate of ammonia, sodium nitrate, high grade muriate of potash or sulphate of potash and sulphuric acid.	Guaranteed contents Contents as found...
" 9	Basic Slag.....	2383	" ..	" ..	....	Guaranteed contents Contents as found...
" 9	Potato Phosphate.	2384	" ..	" ..	Bone, char. bone, dried blood, tankage, meat, fish bone, phosphates, am. sulph. sodium nitrate, high grade muriate of potash or sulphate of potash and sulphuric acid.	Guaranteed contents Contents as found...
" 9	Ceres Superphosphate.	2385	" ..	" ..	" ..	Guaranteed contents Contents as found.
" 9	10 p.c. Potato Phosphate.	2386	" ..	" ..	" ..	Guaranteed contents Contents as found...
" 9	Pure Ground Bone Meal.	2387	" ..	" ..	Bone	Guaranteed contents Contents as found...
" 9	Blood, Bone and Potash.	2388	" ..	" ..	Bone, dried blood, tankage bone phosphates, sulphate of ammonia, nitrate of soda, high grade, muriate of potash or sulphate of potash and sulphuric acid.	Guaranteed contents Contents as found...
" 9	Bilston Basic Phosphate.	2389	Alfred Hickman & Co., Bilston, Ang.	E. E. McNutt, Truro, N.S.	....	Guaranteed contents Contents as found...
" 9	Fertilizer A....	2390	Victoria Chem. Co. Ltd., Victoria, B.C.	Manufacturers..	Nitrate of soda, muriate of potash and superphosphates.	Guaranteed contents Contents as found...
" 22	" B....	2391	" ..	" ..	Nitrate of soda, muriate of potash and superphosphates of lime.	Guaranteed contents Contents as found...

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STANDARD FERTILIZERS.

Results of Analysis.											
Nitrogen, p.c.		Phosphoric Acid, per cent.									
Total, including that of Nitric Acid or Ammonia if Present.	Total, calculated as Ammonia.	Soluble in Water.	Citric soluble.	Insoluble.	Total.	Total available.	Potash.	Moisture.	Relative value per ton of 2,000 lbs.	Number of Sample.	Remarks and Opinion of the Chief Analyst.
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	$ cts.		
2·06—2·47	2·5—3	.....	.....	2—3	8—11	6—8	7—9	...	21 20	2382	
2·10	2·55	6·65	2·35	0 70	9·70	9 00	10 16	10·15	28 07	.....	Up to guarantee.
.....	.....	.....	.....	.....	14—16	.....	.....	.....	.....	2383	
.....	.....	.....	13·80	4·75	18·55	13·80	.....	0·25	16 60	.....	"
1·65—2·47	2—3	.....	...	2—3	9—12	7—9	4—5	...	17 91	2384	
2·38	2·89	7·90	1·64	0·84	10·38	9·54	7·35	9·25	26 98	.....	"
1·65—2·47	2·3	.....	...	2—3	9—12	7—9	2—3	.....	15 91	2385	
2·27	2·75	6·70	1·84	0·76	9 30	8·54	3 02	9·15	21 03	.....	"
2·06—2·47	2·5—3	..	.....	2—3	8—11	6—8	10—12	...	24 20	2386	
1·64	1·99	7·30	1·55	0 80	9·65	8·85	12 91	12 10	29 19	.....	"
2·47—3·06	3—4	...	.....	...	++	.....	.....	.....	...	2387	
4·09	4·96	.....	17·82	7·28	25·10	17·82	.....	7·75	35 69	.....	54·8 p.c. phosphate. Up to
1·65—2·47	2—3	.....	.....	2·3	8—11	6—8	4—5	.....	16 81	2388	guarantee.
2·07	2 48	6·25	1·81	0·64	8—70	8·06	6·23	9·45	22 95	.....	Up to guarantee.
.....	...	†	.....	.....	21·00	.....	*	*	.....	2389	
.....	.....	.....	15·60	5·50	21 10	15·60	...	0 25	18 81	.....	"
4·00	4·86	.....	.....	.....	10·00	.....	7·00	.....	.....	2390	
3·22	3·91	9·44	1·43	0 68	11·57	10·87	7 37	15·90	31 42	.....	"
3·5	4 25	.....	.....	.....	9 00	..	11·00	.....	.....	2391	
3·07	3 72	8·64	1·89	0·58	11·11	10·53	11·35	13·25	34 37	.....	"

† 17 46 Soluable. ++ 50—60 Bone phosphate. * Fine Meal, 89 per cent..

Date When Received.	Designation.	Number of Sample.	Name and Address of Manufacturer.	By Whom Sent.	From what Materials Produced.	——
1909.						
Mar. 22.	Fertilizer C....	2392	Victoria Chem. Co., Victoria, B.C.	Manufacturers..	Muriate of potash and superphosphate of lime.	Guaranteed contents Contents as found...
" 22.	" D....	2393	" ..	" ..	Nitrate of soda, muriate of potash and superphosphate of lime.	Guaranteed contents Contents as found...
" 22.	Superphosphate of Lime.	2394	" ..	" ..	Bone char. and sulphuric acid.	Guaranteed contents Contents as found...
" 22.	Nitrate of Soda.	2395	" ..	" ..	Imported from Chili.	Guaranteed contents Contents as found...
" 22.	Sulphate of Potash.	2396	" ..	" ..	Imported from Germany.	Guaranteed contents Contents as found...
" 22.	Muriate of Potash.	2397	" ..	" ..	Imported from Germany.	Guaranteed contents Contents as found...
" 23.	Bone Meal.....	2398	Prov. Ch. Fertilizer Co., St. John, N.B.	" ..	.....	Guaranteed contents Contents as found...
" 23.	10 p.c. Aroostock Potato.	2399	" ..	" ..	.....	Guaranteed contents Contents as found...
" 23.	*4 p.c. Potato...	2400	" ..	" ..	.....	Guaranteed contents Contents as found...
" 23.	†Special Potato.	2401	" ..	" ..	.....	Guaranteed contents Contents as found...
" 23.	Potato Grower..	2402	" ..	" ..	.....	Guaranteed contents Contents as found...
" 23.	Imperial Superphosphate.	2403	" ..	" ..	.....	Guaranteed contents Contents as found...
" 23.	Victor Guano...	2404	" ..	" ..	.....	Guaranteed contents Contents as found...
" 23.	Fertilizer H...	2405	W. Harris & Co., Toronto.	" ..	Flesh, blood and bone.	Guaranteed contents Contents as found. .
April 2.	Stockbridge Special Complete Manure for Potatoes & Vegetables.	2406	Bowker Fertilizer Co., Boston.	" ..	Bone, bone black, phosphatic guana, bone, phosphate, dried blood, meat or fish, ammonia, sulphate or sodium, nit. pot., sulph. or pot., mur. and sulphuric acid.	Guaranteed contents Contents as found...
" 2	Bowker's Blood, Bone and Potash.	2407	" ..	" ..	" ..	Guaranteed contents Contents as found...
" 2.	Bowker's Early Potato Manure	2408	" ..	" ..	" ..	Guaranteed contents Contents as found...
" 2.	Bowker's Market Garden Fertilizer.	2109	" ..	" ..	" ..	Guaranteed contents Contents as found...

* Is labelled with the word *Potato* only. † Is labelled 6 p.c., but am uncertain to which ingredient this refers.

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STANDARD FERTILIZERS.

Results of Analysis.											
Nitrogen, p. c.		Phosphoric Acid, per cent.									
Total, including that of Nitric Acid or Ammonia if Present.	Total, calculated as Ammonia.	Soluble in Water.	Citric Soluble	Insoluble.	Total.	Total available.	Potash.	Moisture.	Relative value per ton of 2,000 lbs.	Number of Sample.	Remarks and Opinion of the Chief Analyst.
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	$ cts.		
.....	...	.....	.....	...	12·5	.....	11·00	.....	.....	2392	
0·39	0 48	11 83	2·65	0·98	15·46	14·48	11·78	12·40	30 51	....	Up to guarantee.
2·50	3 04	.....	.....	.....	10·00	...	11·00	.....	.....	2393	
2·53	3·07	10 01	2·00	0 68	12·69	12·01	11·30	12·60	34 31	....	"
.....	.....	...	.....	...	16·00	.....	.....	. .	. .	2394	
0·52	0·63	15·85	0·28	0·62	16·75	16·13	.....	12 60	21 28	....	"
15·5	18·82		.....	...	.....	.....	. .....	... .	52 70	2395	
16·02	19·45	. ..	.....	..	....	.....	... .	7·10	54 47	....	"
.....	...	.....	....	....	.....	.....	50	.....	50 00	2396	
.....	.....	.....	...	.....	....	.....	53·62	0·35	53 62	....	"
.....	.....	....	.....	....	.....	... ..	50	.....	50 00	2397	
....	.....	.....	.....	. ..	.....	... ..	49·22	2·80	49 22	....	"
3·21	3·90	.....	.....	.....	23·40	.....	.....	.....	.....	2398	
3·99	4·85	.....	18·77	4·28	23·05	18·77	.....	9·15	35 50	...	"
3·17	3·84	....	... ..	....	7·97	.....	9·28	.....	..	2399	
3·37	4·10	6·65	0·48	0·42	7·55	7 13	10·71	8 65	30 80	...	"
2·45	2 98	....	.	.....	7·80	...	4 78	.....	.....	2400	
1·80	2 31	3·75	3 21	0·99	7·95	6·96	5 23	6·00	19 68	....	Slightly below guarantee.
2·69	3·27	... .	.....	...	8·78	.....	5·20	.....	.....	2401	
2·49	3·03	6·80	1·35	0·70	8·85	8·15	6·71	11·65	25 03	....	Up to guarantee.
3·22	3·91	..	.....	...	6·10	....	9·76	....	... ..	2402	
2·63	3·20	2 55	2·93	0·62	6·10	5 48	13·15 12·87	7·40	28 51	....	"
2·97	3·61	.....	.	.	8·50	.....	2·53	.. ..	.....	2403	
2·80	3·40	6·75	0·64	7·85	7·85	7·39	2·37	15·15	18 70	....	"
2·03	2·47	.....	.....	....	6·70	.....	3 90	.....	.....	2404	
1·83	2·23	3·55	3·42	0·96	7·93	6·97	3·59	8·25	18 12	....	"
6·63	8·05	.....	.....	....	5½—6	.... .	.....	... ..	.....	2405	
7·78	9 45	Trace	6·26	1·52	7·78	6·26	.....	6·50	33 69	...	"
3·30	4	.....	.....	...	7	6	10	.....	28 12	2406	
3·50	4·25	5·90	1·96	1·19	9·05	7·86	8 90	9·25	30 39	....	"
4·12	5	.....	... ..	.. ..	9	7	7	.....	29 31	2407	
4·02	4·88	5·50	3 60	1·30	10·40	9·10	6·60	11·95	31 22	....	"
3·30	4	.....	.....	.....	9	8	7	....	27 32	2408	
3·12	3·79	7·40	3·03	1·32	11·75	10·43	6·47	13·40	29 69	....	"
2·47	3	.....	.....	.....	7	6	10	.....	25 30	2409	
2·39	2·91	4·35	3·30	2·55	10·20	7·65	9·90	10 75	27 64	....	"

Date When Received.		Designation.	Number of Sample.	Name and Address of Manufacturer.	By Whom Sent.	From what Materials Produced	—
1909.							
Apr.	2	Bowker's Vermont Phosphate.	2410	Bowker Fertilizer Co., Boston.	Manufacturers..	Bone, bone black, phosphatic guano, bone phosphate, dried blood meat or fish, ammonia sulph. or sodium, nitrate sulphate of Potash or muriate of potash and sulphuric acid.	Guarantesd contents Contents as found...
"	2	Bowker's Potato and Vegetable Phosphate.	2411	" ..	" ..	" ..	Guaranteed contents Contents as found...
"	2	Bowker's Corn Phosphate.	2412	" ..	" ..	" ..	Guaranteed contents Contents as found...
"	2	Bowker's Square Brand Bone & Potash.	2413	" ..	" ..	" ..	Guaranteed contents Contents as found...
"	2	Bowkers Farm & Garden Phosphate.	2414	" ..	" ..	" .	Guaranteed contents Contents as found...
"	2	Bowkers 6 p.c. Potato Fertilizer.	2115	" ..	" ..	" ..	Guaranteed contents Contents as found...
"	2	Bowkers Sure Crop Phosphate.	2416	" ..	" .	" ..	Guaranteed contents Contents as found...
"	2	Bowkers Potash Bone Phosphate.	2417	" ..	" .	" ..	Guaranteed contents Contents as found...
"	2	Bowkers Superphosphate with potash.	2418	" ..	" ..	" ..	Guaranteed contents Contents as found...
"	2	Bowkers Plain Superphosphate for Orchards.	2419	" ..	" ..	" ..	Guaranteed contents Contents as found...
"	2	Fresh Ground Bone.	2420	" .	" .	.....	Guaranteed contents Contents as found...
"	2	Fresh Nitrate of Soda.	2421	" ..	" ..	.....	Guaranteed contents Contents as found...
"	2	Bowkers Muriate of Potash.	2422	" ..	" ..	.....	Guaranteed contents Contents as found...
"	2	Bowkers Dissolved Bone Black	2423	" ..	" ..	.....	Guaranteed contents Contents as found...
"	6	Griffins Blood & Bone Fertilizer	2424	J. Y. Griffin & Co. Ltd., Winnipeg.	" ..	Blood, bone and rendering scrap	Guaranteed contents Contents as found...
"	8	Muriate of Potash.	2425	The Nitrate Agencies Co., Toronto	" ..	.....	Guaranteed contents Contents as found...
"	8	Sulphate of Potash.	2426	" ..	" ..	.....	Guaranteed contents Contents as found...
"	8	Acid Phosphate.	2427	" ..	" ..	.....	Guaranteed contents Contents as found...

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STANDARD FERTILIZERS.

Results of Analysis.											
Nitrogen, p.c.		Phosphoric Acid, per cent.									
Total, including that of Nitric Acid or Ammonia if Present.	Total, calculated as Ammonia.	Soluble in Water.	Citric Soluble.	Insoluble.	Total.	Total available.	Potash.	Moisture.	Relative value per ton of 2,000 lbs.	Number of Sample.	Remarks and Opinion of the Chief Aalyst.
p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	$ c.		
2·47	3	.....	.....	....	10	8	4	...	21 80	2410	
2·45	2·98	7·20	3·30	0·98	11·48	10·50	5·48	13·65	26 37	....	Up to guarantee.
1·65	2	.....	....	..	9	8	2	.....	16 71	2411	
1·86	2·26	6·93	2·70	2 92	12·55	9·63	2 04	10·90	20 53	....	"
1 65	2	....	.. ..	..	9	8	2	... ..	16 71	2412	
1·85	2·24	7·28	2·79	2·98	13·05	10·07	2 00	11·15	20 99	....	"
1·65	2	.....	....	..	7	6	2	..	14 51	2413	
1·85	2·24	6·20	3·65	3·35	13·20	9·85	1·95	10·05	20 70	...	"
1·65	2	.....	....	... .	9	8	2	.	16 71	2414	
1·96	2·38	6·95	3·18	3 02	13·15	10·13	2·08	11·05	19 41	....	"
0·82	1	....	.....	.	7	6	6	...	15 69	2415	
1·12	1·36	4 93	3·82	2·55	11·30	8·75	5·11	14·24	19 80	...	"
0·82	1	.....	....	.....	9	8	2	....	13 89	2416	
1·18	1·43	6·75	3 28	2·47	12·50	10 03	2·12	13·05	18 58	...	"
0·82	1	.....	.	.....	8	6	2	.....	11 99	2417	
1·19	1·45	6·68	3·32	2·35	12·35	10·00	2 07	13·00	18 49	....	"
.....	...	.....	.	...	11	10	2	.....	13 30	2418	
.....	.....	8·55	4·40	2·30	15·25	12·95	1·75	15·00	17 54	....	"
.....	.....	.....	.. ...	... .	15	14	.....	.....	15 70	2419	
.....	.....	8·17	6·21	1·02	15·40	14·38	.....	14 90	16 94	....	"
2·47	3	....	.....	.....	22·80	....	.....	.....	.....	2420	
3·05	3·71	.. ..	19·35	6·30	25·65	19·35	.....	5·90	33 54	....	"
15	18 21	.....	.....	.....	.....	.....	.....	.....	51 00	2421	
15·46	18·76	....	.....	.....	.....	.....	... ..	1·85	52 56	....	"
.....	.....	.....	.....	.. ...	.....	.....	49·0	.....	49 00	2422	
.....	....	. ...	.....	.....	.....	.....	51·70	0·85	51 70	....	"
.....	.....	.....	.....	.....	16	15	.....	...	16 80	2423	
.....	.....	14·30	1·28	1·77	17·35	15·58	.....	8·50	19 10	...	"
.....	.....	...	.....	.....	.....	.....	.....	.....	.....	2424	
6·75	8 19	Trace	9·23	2·22	11·45	9·23	.....	5·50	33 76	....	No guarantee furnished
....	.....	.....	.....	.....	.....	.....	51·10	.....	51 10	2425	
....	. ..	.....	.....	.....	.....	.....	50·41	.....	50 41	....	Up to guarantee.
....	...	.....	....	.....	. ....	.. .	51·20	.....	51 20	2426	
.....	.....	.....	.....	.....	.....	.....	51·26	.....	51 26	....	"
.... . .	.....		.	0·92	17 70	16·78	.....	.....	18 73	2427	
. .....	.....	15 75	1·05	2·20	19·00	16·80	.....	.....	20 71	... .	"

Date When Received.	Designation.	Number of Sample.	Name and Address of Manufacturer.	By Whom Sent.	From what Materials Produced.	—
1909.						
April 21	Homestead Bone Black Fertilzer	2428	Am. Agr. Chem. Co., Michigan Carbon Works, Detroit.	Manufacturers.	Dissolved bone black, mineral phosphates, sulphate of ammonia, acidulated tankage, sulphate or muriate of potash.	Guaranteed contents Contents as found. . .
" 21	Homestead High Grade Garden and Vegetable Fertilizer.	2429	" ..	" .	Dissolved bone black, mineral phosphates, sulphate of ammonia, acidulattd tankage, sulphate or muriate of potash.	Guaranteed contents Contents as found. . .
" 21	Special Beet Fertilizer.	2430	" ..	" ..	" ..	Guaranteed contents Contents as found. . .
" 21	Sugar Beet Fertilizer.	2431	" .	" .	" .	Guaranteed contents Contents as found. . .
" 21	Gregory's Special High Grade Tobacco Guano.	2432	" ..	" ..	" ..	Guaranteed contents Contents as found. . .
" 21	Dessicated Bone	2433	" ..	" ..	Pure animal bone.	Guaranteed contents Contents as found. . .
" 21	Nitrate of Soda.	2434	" ..	" ..	Imported from Chili.	Guaranteed contents Contents as found. . .
" 21	Muriate of Potash.	2435	" ..	" ..	Imported from Germany.	Guaranteed contents Contents as found. . .
" 22	Calumet Brand Potato, Tobacco and Onion Grower.	2436	Hirsh, Stein & Co., Chicago.	" ..	Bone and animal matter and sulphate of potash.	Guaranteed contents Contents as found. . .
" 22	Calumet Brand Special Potato and Onion Grower.	2437	" ..	" ..	" .	Guaranteed contents Contents as found. . .
" 22	Calumet Brand Bone Phosphates.	2438	" ..	" ..	Bone.	Guaranteed contents Contents as found. . .
" 22	Nitrate of Soda.	2439	" ..	" ..	.....	Guaranteed contents Contents as found. . .
" 22	Muriate of Potash.	2440	" ..	" ..	....	Guaranteed contents Contents as found. . .
May 6	Standard. ..	2441	Standard Fertl. & Ch. Co., Smith's Falls.	" ..	Nitrate of soda, sulphate of ammonia, potash and magnesia satls, mineral superphosphate and fine bone meal.	Guaranteed contents Contents as found. . .
" 6	Special.....	2442	" ..	" ..	" ..	Guaranteed contents Contents as found. . .
June 4	Fertilizer.	2443	London Fertilizer Works, London, Ont.	" ..	Dry tankage, ammonia, phosphoric acid and potash.	Guaranteed contents Contents as found. . .

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STANDARD FERTILIZERS

Results of Analysis.											
Nitrogen, p.c.		Phosphoric Acid, per cent.									
Total, including that of Nitric Acid or Ammonia if present.	Total calculated as Ammonia.	Soluble in water.	Critic Soluble	Insoluble.	Total,	Total available.	Potash.	Moisture.	Relative value per ton of 2,000 lbs.	Number of Sample.	Remarks and Opinion of the Chief Analyst.
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	$ cts.		
2·06	2·50	....	.....	.....	10·00	8·00	1·50	.....	17 30	2428	
2·44	2·96	7·65	2·08	1·62	11·35	9·73	1·89	9·00	22 14	....	Up to guarantee.
1·65	2·00	.....	.....	.....	10·00	8·00	5·00	.....	19 41	2429	
1·85	2·24	7·40	1·43	0·92	9·75	8·83	4·47	12·50	21 49	...	"
1·65	2·00	.....	....	.....	10·00	8·00	5·00	.....	19 41	2430	
1·82	2·21	7·70	1·38	0·97	10·05	9·08	4·77	13·50	22 00	....	"
1·23	1·50	....	.....	....	11·00	9·00	2·00	....	16 08	2431	
1·18	1·43	6·50	1·73	1·52	9·75	8·23	1·95	13·10	16 12	....	"
2·47	3·00	....	....	.....	10·00	8·00	4·00	.....	21 20	2432	
2·56	3·11	7·65	1·33	1·02	10·00	8·98	6·04	12·75	25 69	....	"
1·23	1·50	.....	....	.....	25·00	....	.....	....	.....	2433	
2·04	2·48	....	20·25	10·05	30·30	20·25	....	2·25	32 18	..	"
14·81	18·00	.....	.	.....	.....	.....	.....	....	50 35	2434	
15·57	18·90	....	....	....	.....	.....	.....	2·25	52 94	...	"
....	.....	.....	.....	...	.....	....	50·00	.	50 00	2435	
.....	.....	....	..	.....	....	....	49·62	0·40	49 62	...	"
1·60	2·00	....	.....	1·00	9·00	8·00	5·00	.....	19 54	2436	
2·24	2·72	3·85	6·63	0·72	11·20	10·48	6·43	3·75	25 17	....	"
1·60	2·00	....	.....	1·00	6·00	5·00	10·00	.....	21 24	2437	
2·35	2·86	2·80	7·23	0·97	11·00	10·03	10·18	3·90	29 77	....	"
.....	.....	.....	.....	1·00	11·00	10·00	.. .	.....	11 30	2438	
0·49	0·60	5·06	6·43	0·72	12·15	11·43	....	1·35	14 95	....	"
15·00	18·21	.....	.. ..	.....	..	.. ..	.....	.... .	51 00	2439	
15·45	19·24	.....	....	.....	.....	....	.....	1·75	52 53	...	"
.....	.	...	.....	.....	.....	.. .	50·00	.. ..	50 00	2440	
.....	...	.....	....	.. ...	... ..	... ..	54·76	0·50	54 76	.. .	"
2·06	2·5	.....	....	.....	.....	9	2	.....	24 84	2441	
2·73	3·31	9·15	1·04	8·36	18·55	10·19	3·07	7·50	26 98	....	"
2·88	3·5	.....	.. ..	....	.....	8	7	.. .	25 59	2442	
4·42	5·37	10·20	1·82	0·68	12·70	12·02	7·04	4·90	36 51	....	"
4·96	5·95	....	... .	.....	16·70	.....	3·03	1·09	. . .	....	
4·30	5·22	trace	11·90	4·68	16·58	11·90	3·42	7·60	32 53	2443	"

Dated when Received.	Designation.	Number of Sample.	Name and Address of Manufacturer.	By Whom Sent.	From what Materials Produced.	—
1909.						
May 25.	Soluble Bone....	2444	The Buffalo Fertilizer Co., Buffalo, N.Y.	Manufacturers..	... .	Guaranteed contents Contents as found...
" 25.	Extra Bone and Potash.	2445	" .	" ..	.....	Guaranteed contents Contents as found...
" 25.	Ideal Wheat and Corn.	2446	" ..	" .	.....	Guaranteed contents Contents as found...
" 25.	General Crop .	2447	" ..	" ..	.....	Guaranteed contents Contents as found...
" 25.	Bone and Potash.	2448	" ..	" ..	.....	Guaranteed contents Contents as found...
" 25.	Farmer's Choice.	2449	" ..	" ..	.....	Guaranteed contents Contents as found...
" 25.	4-6-10 Fertilizer.	2450	" ..	" ..	.....	Guaranteed contents Contents as found...

SESSIONAL PAPER No. 14

STANDARD FERTILIZERS.

Results of Analysis.												
Nitrogen, p.c.		Phosphoric Acid, per cent.										
Total, including that of Nitric Acid or Ammonia if present.	Total, calculated as Ammonia.	Soluble in Water.	Citric Soluble.	Insoluble.	Total.	Total available.	Potash.	Moisture.	Relative value per ton of 2,000 lbs.	Number of sample.	Remarks and Opinion of the Chief Analyst.
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	$ cts.		
....	.....	...	.....	...	..	14·00	.....	.....	15 40	2444	
.....	.....	7·70	6 75	2·55	17·00	14 45	..	.....	17 43	....	Up to the guarantee.
....	....	...	.....	.....	.. .	10·00	8 00	....	19 00	2445	
.....	....	7·90	2·25	2·05	12·20	10 15	7·75	.....	20 32	...	"
1·65	2·00	...	....	.....	... .	9·00	5·00	..	20 51	2446	
2·08	2·53	7·90	1·10	1·20	10·20	9·00	6·17	.....	24 29	..	"
.....	.....	...	.....	... ...	... .	9·00	3·00	.....	12 90	2447	
. . . ..	.....	6·80	3·70	1·85	12·35	10·50	3·05	.....	15 83	....	"
. .. .	.	.....	.....	.....	... ..	12·00	5·00	.. .	18 20	2448	
.....	....	8·90	2 90	2·40	14 20	11·80	5·51	....	20 10	...	"
....	1 00	.....	.....	.....	....	8·00	5·00	.....	16 62	2449	
0·85	1 03	7 95	1·85	2·30	12·10	9 80	5·52	.. .	20 67	....	"
.. . .	4·00	...	.....	..	.....	6·00	10·60	.. .	27 82	2450	
2·86	3·50	7 95	0·30	1·85	10·10	8·25	11·20	. .	31 35	....	"

APPENDIX D.

BULLETIN No. 183—TEA

OTTAWA, July 6, 1909.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I have the honour to submit to you, herewith, a report upon 222 samples of Teas, collected throughout Canada, in April of the present year.

Tea has been examined on three former occasions, under the Adulteration of Food Act. In April, 1891, a collection of 58 samples was made, and submitted for analysis to the late Professor Kenrick, of Winnipeg. His report will be found in Bulletin No. 24, published in June, 1891. None of the samples were declared to be adulterated, although about 6 per cent are classified as 'doubtful.' Professor Kenrick's report is valuable mainly on account of certain investigatory work contained in it. Thus, he has demonstrated that the so-called *domestic method* of infusing tea, while less fully removing the total soluble matters than is the case with ordinary laboratory methods, yields fairly constant and comparable results, if carried out according to a definite *modus;* and extracts the Theine with much greater relative completeness than the Tannin, a matter which is of importance in the household. The following figures are instructive and important:—

	LABORATORY METHODS OF EXTRACTION.				DOMESTIC METHOD OF EXTRACTION (KENRICK.)			
	No. of samples.	Total Extractive.	Theine.	Tannin.	No. of samples.	Total Extractive.	Theine.	Tannin.
Black teas (averages).	44	31·89	2·47	13·33	23	23 56	2·73	5·29
Green teas (averages)	19	39·92	2·14	19·47	7	31·38	2·46	9·49

NOTE.—The results given under laboratory methods are quoted from Hassall, Battershall, Bell, Dragendorff and others.

A second examination was made in 1904, when 73 samples collected throughout Canada, were found to be genuine teas. This report forms Bulletin No. 99.

A third collection was made in August, 1907, comprising 89 samples, of which 82 were pronounced genuine and 7 samples 'doubtful.' (See Bulletin No. 130).

The late chief analyst was guided in his decisions regarding teas, by the following Order in Council, of date September 11, 1894.

'Tea shall be considered as adulterated which contains leaves other than those of the tea-plant; or previously infused leaves or leaves of inferior quality to such an extent as to reduce the amount of extract or substances soluble in hot water to less than thirty per cent, or cause the proportion of ash soluble in hot water to be less than two and three-quarters per cent; or any admixture of chemicals or other deleterious substances, or such an amount of mineral matter as will cause the amount of ash to exceed eight per cent reckoned on the sample dried at 100° C.'

The Order in Council fixes 30 per cent as a minimum of extractive matter, without however defining a method by which the extract shall be made. It is seen from Professor Kenrick's figures, that the so-called *domestic method*, does not extract 30 per cent of soluble matter in black teas, and it follows that this method cannot be regarded as authoritative under present regulations. For this reason it has not been adopted in the performance of the work now recorded. The extract has been determined by the following process.

To 5 grammes of the sample, ground to a tolerable degree of fineness, 200 cc. of water is added, and boiled on a sand-bath, in a glass flask, for two hours. It is then thrown on a filter, and the residue washed 3 times with warm water. The filtrate and washings, are made up to a definite volume and an aliquot portion is evaporated to dryness, at 100° C.

Working by this method, it will be seen that 157 samples (= 71 per cent of the collection) yielded 30 per cent of extractive. If a reasonable margin of error (1 per cent) be allowed, the number reaching the standard is 172 (78 per cent) Of 50 samples which fail to reach the standard of extractive, 31 are black teas, and 19 green teas. It has already been pointed out that the mean extractive matter in green tea is normally higher than in black.

It is impossible to describe the fifty samples falling below 30 per cent extractive, as adulterated under the Act, because the Order in Council of September 11, 1894, does not describe the method by which the extractive is to be determined. It is well known that if the boiling of vegetable matter be long continued, although readily soluble substances are dissolved in an hour, or less, the more difficult soluble material continues to go into solution for several hours, and a greatly prolonged boiling may bring about decomposition products which are more or less soluble, so that a definite end point is difficult to reach. It is evidently not the intention of this test, as applied to tea, that the boiling should be continued to the point of decomposition of tissues; but the mode of operating should be exactly defined.

In order to demonstrate the importance of this point, four samples which gave distinctly less than 30 per cent extractive by the method already described, were subjected to more vigorous extraction, and gave the following results:—

Number of Sample.	Extractive as per Tables.	Extraction continued.	Mean.	Difference.
37600	23·52	{ 34·84 / 34·66 }	34·74	11·22
36872	23·68	{ 26·72 / 25·36 }	26·04	2·36
40017	22·56	{ 33·00 / 31·00 }	32·00	9·44
29903	21·72	{ 25·20 / 25·40 }	25·30	3·58

These very large differences suffice to show the necessity of exactly defining the method by which extractive is to be determined.

Two samples, both invoiced as *Tea Dust* exceed the limit of 8 per cent of ash. It is open to question whether the article sold as *Tea Dust* should be regarded as a com-

mercial tea, for purposes of the Act. These samples are sold at 12 cents per pound, retail; and this fact, together with the acknowledgment that they are *Tea Dust*, leads me to question whether they should be held to be adulterated under the Act.

Summary of Results.

	Samples.
Total number of Teas examined	222
" " Black Teas	160
" " Green "	54
" " Mixed "	8
Below Standard (Black Teas	31
in Extractive (Green "	19
Yielding more than 8 per cent ash	2

Previous inspections of tea have included all grades of the article. On this occasion special instructions were given to inspectors to purchase the cheapest grades only. With very few exceptions, the teas herein reported are retailed at from 15 to 30 cents per pound. They may therefore be regarded as representing the lower qualities of this article. Most samples consist of large, coarse leaves, very much broken, and have a large proportion of leaf-stalks and bits of stem. The delicate aroma of good tea is notably absent, on infusing; but the teas are botanically true to name, and no admixture of foreign leaves occurs.

The results of this examination as submitted, will enable action to be taken with a view to defining methods of analysis; and particularly emphasize the necessity of altering the Order in Council of September 11, 1894, so as to include in it a description of the mode of making the extract of tea therein referred to.

It is also desirable to ascertain whether an article sold as *Tea Dust*, is to be regarded as *Tea* for purposes of the Act.

I beg to recommend publication of this report as Bulletin No. 183.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion).	Results of Analysis. Total Ash	Results of Analysis. Extractive.	Results of Analysis. Microscopical Examination.	Number of Sample.	Remarks and Opinion of the Chief Analyst.
DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR.												
1909.								p. c.	p. c.			
April 14	Tea, Black.	33911	Wm. Moore, Halifax, N.S.	1 lb.	20	Bryant & McDonald, Halifax, N.S.	.....	5·40	34·50	Broken tea leaves and some pieces of stems.	33911	
" 14	"	33912	Wentzell's, Ltd., Halifax, N.S.	1 "	20	Vendors.....	.....	5·24	32·90	Broken tea leaves.....	33912	
" 14	"	33913	Craig & Hodgson, Halifax, N.S.	1 "	25	J. E. Morse & Co., Halifax, N.S.	.....	5·80	29·68	Broken tea leaves and a few pieces of stems	33913	
" 15	"	33914	J. D. Stewart, Halifax, N.S.	1 "	25	Bauld Bros. & Co., Halifax, N.S.	.....	6·10	30·80	Broken tea leaves.....	33914	
" 15	"	33915	Jas. Hogan, Halifax, N.S.	1 "	25	Jno. Tobin & Co., Halifax, N.S.	.....	5·34	31·75	"	33915	
" 15	"	33916	A. L. Doyle & Co., Halifax, N.S.	1 "	25	J. E. Morse & Co., Halifax, N.S.	.....	6·54	34·84	"	33916	
" 15	"	33917	Forristall & Co., Halifax, N.S.	1 "	30	Bauld Bros. & Co., Halifax, N.S.	.....	5·50	35·20	"	33917	
" 15	"	33918	T. J. Brown, Halifax, N.S.	1 "	30	H. W. Deforest, St John, N.B.	"Union".....	5·48	32·68	Broken tea leaves and some pieces of stems.	33918	
" 15	"	33919	A. J. Finley, Halifax, N.S.	1 "	30	Unknown.....	.....	5·30	26·44	Broken tea leaves.....	33919	Extractive low.
" 15	"	33920	City Provision Co., Halifax, N.S.	1 "	30	A. Hobrecker, Halifax, N.S.	"Perfect Ceylon."	5·14	33·92	Broken tea leaves and some pieces of stems.	33920	
" 15	"	33921	J. S. Archibald & Son, Halifax, N.S.	1 "	30	Unknown.....	Sold as "China".	5·10	29·40	Broken tea leaves....	33921	
" 16	"	33922	Shore & Campbell, Halifax, N.S.	1 "	25	Bryant & McDonald, Halifax, N.S.	Ceylon	5·60	34·28	"	33922	
" 16	"	33923	S. A. Clarke & Co., Halifax, N.S.	1 "	25	J. E. Morse & Co., Halifax, N.S.	"Monarch".....	5·30	33·84	"	33923	
" 23	"	33924	E. M. Walker, Dartmouth, N.S.	1 "	30	Unknown.....	"Mountain".....	5·56	38·00	Broken tea leaves and a few pieces of stems	33924	
" 23	"	33925	A. W. Huxtable, Dartmouth, N.S.	1 "	30	Bauld Bros. & Co., Halifax, N.S.	"Acadia".....	5·40	32·76	Broken tea leaves.....	33925	

DISTRICT OF PRINCE EDWARD ISLAND—THEO. MOORE, INSPECTOR.

April	7	Tea, Black..	31458	R. T. Holman, Ltd., Summerside.	1 lb..	25	T. H Estabrooks, St. John, N.B.	"Reliance" blend	5·60	33·24	Broken tea leaves.....	31458		
"	7	" ..	31459	W. Y. Lidstone, Summerside.	1 " ..	25	Rowley & Davies, London, Eng.	"Beaver" blend	5·50	38·08	"	31459		
"	7	" ..	31460	F. W. Strong, Summerside.	1 " ..	25	Burbridge, Pritchard & Bartlett, London, Eng.	"Crown" blend	5·64	33·12	"	31460		
"	7	" ..	31461	Brace & McKay, Summerside.	1 " ..	25	Rowley & Davies, London, Eng.	.....	5·54	36·12	Broken tea leaves and a few pieces of stems	31461		
"	7	" ..	31462	Sinclair & Stewart, Summerside.	1 " ..	25	J. E. Morse & Co., Halifax, N.S.	....	5·54	38·32	Broken tea leaves.....	31462		
"	8	" ..	31463	J. A. Hynes, Kensington.	1 " ..	25	T. H. Estabrooks, St. John, N.B.	.. ..	5·40	32·12	Broken tea leaves and a few pieces of stems	31463		
"	8	" ..	31464	James Kennedy, Kensington.	1 " ..	25	H. W. Deforest, St. John, N.B.	"Starlight" blend.	5·40	32·32	Broken tea leaves.....	31464		
"	12	" ..	31465	A. E. McKinnon, Mount Stewart.	1 lb..	25	Carvell Bros., Charlottetown	....	5·34	31·40	Broken tea leaves.....	31465		
"	12	" ..	31466	W. H. Pigott, Mount Stewart.	1 " ..	25	T. H. Estabrooks, St. John.	.....	5·34	31·20	"	31466		
"	12	" ..	31467	Clarke Bros., Mount Stewart.	1 " ..	24	W. D. Stroud, Montreal.	"Champion" Blend.	5·50	33·12	"	31467		
"	12	" ..	31468	P. W. McLeod, Mount Stewart.	1 " ..	24	H. W. De Forrest, St. John, N.B.	"McLeod's Scotch." Blend	5·60	30·56	Broken tea leaves and some pieces of stems.	31468		
"	12	" ..	31469	A. A. McDonald Bros. Georgetown.	1 " ..	25	Stroud & Son, Montreal	"A Blend Tea"	5·44	38·72	Broken tea leaves.....	31469		
"	12	" ..	31470	W. W. Jenkins, Georgetown.	1 " ..	25	McGougan & Co., Georgetown.	"Empire" Blend	5·48	35·60	Broken tea leaves and a few pieces stems.	31470		
"	12	" ..	31471	Stewart & Son, Charlottetown.	1 " ..	25	Bryant & McDonald, Halifax.	"Famous" Blend	5·44	29·16	"	31471		
"	12	" ..	31472	GeorgeRackham, Charlottetown.	1 " ..	25	H. Haszard, Charlottetown.	"Haszard's" Blend.	5·40	33·76	Broken tea leaves.....	31472		

DISTRICT OF NEW BRUNSWICK—J. C. FERGUSON, INSPECTOR.

Mar.	22	Tea, Black..	29892	Barkers Ltd., St. John, N.B.	1 lb..	30	J. Harvey Brown, St. John. N.B.	"Peerless".....	5·54	32·92	Broken tea leaves.....	29892		
"	22	" .	29893	H. W. Dykeman, St. John, N.B.	1 " ..	35	P. C. Larkin & Co., Montreal.	"Salada".....	4·90	26·48	"	29893	Extractive low	
"	23	" ..	29894	G. H. Stephenson, St. John, N.B.	1 " ..	30	T. H. Estabrooks & Co. Ltd., St. John, N.B.	"Red Rose".....	5·08	32·60	"	29894		
"	23	" ..	29895	D. Cosman, St. John, N.B.	1 " ..	30	Baird & Peters, St. John, N.B.	"Vim".....	5·50	32·12	Broken tea leaves and a few pieces of stems.	29895		
"	24	" .	29896	James Collins, St. John, N.B.	1 " ..	35	Vendor	"Emerald".....	5·50	32·32	Broken tea leaves and some pieces of stems.	29896		

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion.)	Results of Analysis. Total Ash	Results of Analysis. Extractive.	Results of Analysis. Microscopical Examination.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
DISTRICT OF NEW BRUNSWICK—J. C. FERGUSON—*Concluded.*												
1909.								p. c.	p. c.			
Apr. 6	Tea, Black	29897	T. W. Sansom, Fredericton, N.B.	1 lb.	30	Chas. H. McDonald, St. John, N.B.	"Red Clover"	5·54	25·68	Broken tea leaves	29897	Extractive low.
" 8	"	29898	Estate of John Graham Woodstock, N.B.	1 "	40	W. C. Purves, St. Stephen, N.B.		5·48	33·52	"	29898	
" 8	"	29899	B. Beveridge, Andover, N.B.	1 "	35	Harry W. DeForest, St. John, N.B.		5·50	30·08	Broken tea leaves and some pieces of stems.	29899	
" 10	"	29900	J. W. McPhail, Perth, N.B.	1 "	35	W. C. Purves, St. Stephen, N.B.	"Nectar"	5·28	32·24	"	29900	
" 14	"	29901	N. W. Eveleigh & Co., Sussex, N.B.	1 "	25	Chas. H. McDonald, St. John, N.B.	"Eveleighs Special."	5·50	33·72	"	29901	
" 10	"	29902	C. W. Lewis, Perth, N.B.	1 "	30	W. D. Stroud, Montreal.		5·91	34·32	Broken tea leaves	29902	
" 14	"	29903	Alex. J. Roy, Moncton, N.B.	1 "	25	Geo. E. Barbour Co., Ltd., St. John, N.B.		1·68	21·72	"	29903	Extractive low.
" 16	"	29904	J. D. Paulin, Newcastle, N.B.	1 "	30	Bryan & McDonald, Halifax, N.S.	"Paulins Best"	5·40	34·64	Broken tea leaves and some pieces of stems.	29904	
" 17	"	29905	Adams Burns & Co., Bathurst, N.B.	1 "	25	Chas. H. McDonald, St. John, N.B.		5·86	24·56	Broken tea leaves and some stems.	29905	Extractive low.
" 19	"	29906	Moores Bros., Campbellton, N.B.	1 "	30	W. F. Hatheway Co., Ltd., St. John, N.B.	"Tiger"	5·44	26·84	Broken tea leaves	29906	"
DISTRICT OF QUEBEC—E. BELAND, INSPECTOR.												
April 21	Tea, Green	36868	T. Falardeau, Quebec.	1 lb.	13	T. B. Bedard & frere, Quebec.		7·21	35·42	Broken tea leaves	36868	
" 21	" Mixed.	36869	C. T. Bailey, Quebec.	1 "	12	Stroud, Montreal		9·74	32·60	Tea dust	36869	Ash too high.
" 21	" Green.	36870	F. X. Goslin, Quebec.	1 "	20	Lavoie & Dion, Quebec		6·10	31·48	Broken tea leaves	36870	

"	21	"	"	36871	Louis Nadeau, Quebec	1	"	25	Unknown		5·28	31·76	"	36871		
"	22	"	Black	36872	A. Pouliot, Quebec	1	"	20	Lavoie & Latulippe, Quebec.		6·90	23·68	Broken tea leaves and some pieces of stems.	36872	Extractive low.	
"	22	"	Green	36873	Emile Emond	1	"	20	Stroud, Montreal		6·54	28·12	Broken tea leaves	36873	"	
"	22	"	Black	36874	L. A. Warren, Quebec	1	"	20	A. Gigeure, Quebec		5·44	23·56	"	36874	"	
"	22	"	Green	36875	Denis Davis, Quebec.	1	"	40	Unknown		6·50	32·56	"	36875		
"	22	"	Black	36876	A. Turcotte, Quebec	1	"	20	Drouin Frère, Quebec		5·48	32·32	"	36876		
"	22	"	Green	36877	A. Brodeur, Quebec	1	"	30	Unknown		6·34	24·72	"	36877	Extractive low.	
"	22	"	"	36878	T. E. Gregoire, Quebec	1	"	12	Lavoie & Dion, Quebec		9·24	26·00	Tea dust	36878	Extractive low; ash too high.	
"	22	"	"	36879	T. L. Letourneau, Quebec.	1	"	15	Joseph & Son, Quebec		6·04	36·56	"	36879		
"	22	"	"	36880	C. Belanger, Quebec	1	"	15	Unknown		7·54	25·08	Broken tea leaves.	36880	Extractive low.	
"	22	"	Black	36881	M. W. Colman	1	"	25	"		5·34	35·04	Broken tea leaves and a few pieces of stems.	36881		
"	22	"	Green	36882	H. St. Cyr, Quebec	1	"	15	Whitead & Turner, Quebec.		7·40	26·60	Slightly broken tea leaves.	36882	Extractive low.	

DISTRICT OF ST. HYACINTHE—J. C. ROULEAU, INSPECTOR.

April	19	Tea	Green	1001	O. F. Piche, Drummondville.	1	lb	25	Unknown	Green, Ceylon	6·10	39·44	Broken tea leaves	1001		
"	20	"	"	1002	P. Larochelle, Farnham.	1	"	40	Kearney Bros., Montreal.	Japan	6·14	30·40	Broken tea leaves and a few stems.	1002		
"	21	"	"	1003	J. Raymond, St. Jean.	1	"	30	M. Brassard, St. Jean.	"	5·36	29·04	Broken tea leaves.	1003		
"	23	"	"	1004	J. Brodeur, Granby	1	"	40	W. D. Stroud, Montreal.	"	6·80	39·08	"	1004		
"	26	"	"	1005	A. G. Prefontaine, Beloil.	3	pks.	60	P. C. Larkin & Co., Montreal.	Green. Guaranteed pure.	4·56	38·76	Broken tea leaves and and a few stems.	1005		
"	28	"	"	1006	W. L. Beauchmin, Roxton Falls.	3	"	25	Hudon, Hebert & Cie, Montreal.	Japan	6·84	40·00	Broken tea leaves	1006		
"	28	"	"	1007	A. Chicoine, Actonvale.	3	"	15	Kearney Bros., Montreal.		6·46	25·44	Minute fragments of tea leaves.	1007	Extractive low.	
"	28	"	"	1008	Geo. E. Hotu, Upton.	1	lb	40	Lacaille & Gendreau, Montreal.	Japan	6·08	36·84	Broken tea leaves	1008		
"	29	"	"	1009	T. Maheu, Arthabaskaville.	1	"	25	H. H. Guay, Victoriaville.	Green	6·64	24·44	"	1009	Extractive low	

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion).	Results of Analysis. Total Ash	Extractive.	Microscopical Examination.	Number of Sample.	Remarks and Opinion of the Chief Analyst.
DISTRICT OF ST. HYACINTHE—J. C. ROULEAU, INSPECTOR—*Concluded.*												
1909.								p. c.	p. c.			
April 29	Tea, Green.	1010	U. Mahew, Victoriaville.	1 " ..	25	L. Chaput fils & Co., Montreal.	....	6·20	28·60	Broken tea leaves and a few stems.	1010	Extractive low.
May 5	" Black.	1011	W. B. Murray, E. Sherbrooke.	1 " ..	40	Unknown	Black	4·94	35·64	Broken tea leaves.. ..	1011	
" 5	" " .	1012	Johnston Bros., Lennoxville.	1 " ..	30	"	"	5·54	28·76	"	1012	Extractive low.
" 6	" " .	1013	F. W. D. Melloow, Rock Island.	1 " ..	25	Lipton, England.....	"	6·14	28·12	" ...	1013	"
" 10	" Green.	1014	Louis Valin, St. Joseph de St. Hya.	1 " ..	30	Kearney Bros., Montreal.	Japan..... ...	6·70	32 00	Broken tea leaves and a few stems.	1014	
" 18	" " .	1015	C. Dansereau, Contrecoeur.	1 " ..	30	Lacaille & Gendreau, Montreal.	"	5 70	37·52	"	1015	
DISTRICT OF MONTREAL—J. J. COSTIGAN, INSPECTOR.												
April 13	Tea, Green.	40011	A. Laurandeau, 85 St. Paul St., Montreal.	1 lb .	20	... .	Green.....	6·66	26·08	Broken tea leaves....	40011	Extractive low.
" 13	" Black.	40012	" ..	1 " ..	25	....	Black	5·12	27·64	Broken tea leaves and pieces of stems.	40012	"
" 14	" " .	40013	S. Desauliners, 437 Notre Dame W.	1 " ..	20	.. ..	"	5·54	25·16	"	40013	"
" 14	" " .	40014	" ..	1 " ..	25	....	"	6·11	27·72	"	40014	"
" 14	" " .	40015	C. T. Spinello, 502 Notre Dame W.	1 " ..	35	.. ..	"	5·74	34·08	Broken tea leaves... .	40015	
" 14	" Green.	40016	N. Sirois, 32 Craig St., Montreal.	1 " ..	25	J. A. Simard, Montreal	Japan.....	7·10	30·52	Broken tea leaves and pieces of stems.	40016	
" 14	" Black.	40017	J. J. Duffy & Co., Montreal.	1 " ..	30	....	Black. Special Blend.	5·40	22·56	"	40017	Extractive low.

"	26	"	Green.	40018	F. Rivet, Joliette.....	1	"	..	30	....	Japan	5·90	37·40	"	40018	
"	26	"	Black.	40019	O. Chevalier & fils., Joliette.	1	"	..	35	....	Black	5·30	36·68	Broken tea leaves.....	40019	
"	28	"	" .	40020	E. Lavigne, Lachute, P.Q.	1	"	..	30	....	"	5·24	32·08	"	40020	
"	28	"	Green.	40021	G. L. Meikle, Lachute, P.Q.	1	"	..	25	....	Green	6·51	41·72	Broken tea leaves and pieces of stems.	40021	
May	6	"	" .	40022	C. E. Laflamme, St. Jérôme.	1	"	..	25	....	Japan	6·20	27·56	Broken tea leaves.....	40022	Extractive low.
"	6	"	Black.	40023	J. M. Richard, St. Jérôme.	1	"	.	30	....	Black	5·30	31·08	Broken tea leaves and a few pieces of stems.	40023	
"	12	"	Green.	40024	E. Brais, Montreal. ..	1	"	..	30	....	Japan.....	6·74	30·84	Broken tea leaves.....	40024	
"	12	"	" .	40025	A. Genereau, Montreal	1	"	..	25	....	"	7·14	35·09	"	40025	

DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR.

Mar.	16	Tea, Green.		22911	M. J. Lavigne, Hull, P.Q.	1	lb	..	15	Unknown	.....	7·14	27·56	Broken tea leaves.....	22911	Extractive low.
"	16	"	" .	22912	D. Seguin, Hull, P.Q..	1	"	..	20	"	... .	7·00	28·88	"	22912	"
"	19	"	Black.	22913	R. J. Cameron, Buckingham.	1	"	..	25	J. A. Cunningham, Buckingham.	"Owl Chop"...	5·00	28·96	Broken tea leaves and pieces of stem.	22913	"
"	19	"	Green.	22914	McCallum & Labaie, Buckingham.	1	"	..	20	F. W. Allan, Buckingham.	....	6·30	28·16	Broken tea leaves.....	22914	"
"	22	"	Black.	22915	W. A. Hodgins, Shawville.	1	"	..	30	Matthewsons Sons, Montreal.	.....	5·00	33·52	Broken tea leaves and pieces of stem.	22915	
"	23	"	Green.	22916	G. A. Ellis, Renfrew..	1	"	..	25	Thos. Woods, Montreal	....	4·62	30·52	Broken tea leaves. ...	22916	
"	23	"	"	22917	Carswell & Co., Renfrew.	1	"	..	25	Geo. Robertson & Son, Kingston.	.....	6·34	31·60	" . ..	22917	
"	23	"	Black.	22918	J. L. Lafontaine, Ottawa.	1	"	..	40	Canada Direct Tea Trading Co.	.....	5·96	32·72	Broken tea leaves and pieces of stem.	22918	
"	24	"	Green.	22919	D. St. Amour, Ottawa	1	"	..	25	S. J. Major, Ltd., Ottawa.	... .	7·30	28·32	Broken tea leaves.....	22919	Extractive low.
"	24	"	Black.	22920	J. E. Duhaime, Ottawa	1	"	..	25	F. J. Castle Co., Ottawa	... .	5·40	32·28	"	22920	
"	24	"	Green.	22921	F. Schingh, Ottawa...	1	"	..	25	Jos. Grant, Ottawa ...	....	5·01	34·76	"	22921	
"	26	"	Black.	22922	Jas. Herbert, Ottawa.	1	"	..	25	Kearney Bros., Montreal.	.. ..	5·54	33·20	Broken tea leaves and pieces of stem.	22922	
"	26	"	Green.	22923	M. J. Laverdure, Hull.	1	"	..	25	" ..	.....	7·08	25·52	" " ..	22923	Extractive low.
"	26	"	Black.	22924	A. Gagnon, Hull.....	1	"	..	25	Unknown	.. . .	5·04	31·84	Broken tea leaves. ...	22924	
"	27	"	" .	22925	W. H. Dickson, Quyon, P.Q.	1	"	..	25	W. D. Stroud, Montreal	....	5·54	33·08	Broken tea leaves and a few pieces of stems	22925	

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion).	Results of Analysis. Total Ash	Results of Analysis. Extractive.	Results of Analysis. Microscopical Examination.	Number of Sample.	Remark and Opinion of the Chief Analyst.
DISTRICT OF KINGSTON—JAS. HOGAN, INSPECTOR.												
1909.								p. c.	p. c.			
Mar. 17	Tea, Green..	39441	Geo. Gibson, Kingston	1 lb..	30	Minto Bros., Toronto.	... .	5·74	33·12	Broken tea leaves and pieces of stem.	39441	
" 17	" Mixed.	39442	Wm. Davies, Kingston	1 " ..	30	Wm. Davies	... .	4·96	32·00	Broken tea leaves.....	39442	
" 17	" Black .	39443	W. D. Stroud, Kingston.	1 " ..	20	W.D. Stroud, Montreal	....	5·31	31·84	Broken tea leaves and pieces of stem.	39443	
" 17	" " .	39444	P. A. Haffner, Kingston.	1 " ..	30	Geo. Robertson & Son, Kingston.	....	5·34	38·36	" " ..	39444	
" 17	" Green .	39445	Jas. McCulla, Kingston.	1 " ..	20	Kearney Bros., Montreal.	....	6·96	28·64	Broken tea leaves. ..	39445	Extractive low.
" 17	" Black .	39446	J. Lemmon, Kingston.	1 " ..	25	W. G. Craig, Kingston	....	5·28	33·72	"	39446	
" 17	" " .	39447	J. A. Donaldson, Kingston.	1 " ..	25	" ..	....	5·60	31·30	"	39447	
" 17	" " .	39448	A.T. Morris, Kingston	1 lb..	25	Geo. Robertson, Kingston.	.....	5·24	30·80	Broken tea leaves....	39448	
" 18	" " .	39449	H.M.Stover, Kingston	1 " ..	40	" ..	.....	5·20	32·32	Broken tea leaves and pieces of stem.	39449	
" 18	" Green.	39450	C Litton, Kingston ..	1 " ..	25	Minto Bros., Toronto..	....	6·20	33·08	Broken tea leaves.....	39450	
" 22	" Black.	39451	J. Harker, Belleville..	1 " ..	25	Unknown	....	5·40	32·00	"	39451	
" 22	" " .	39452	Guillet Bros., Cobourg	1 " ..	25	Hayhoe Co., Toronto..	.....	5·50	29·24	Broken tea leaves and pieces of stem.	39452	
" 23	" " .	39453	J. E. Lillico, Peterboro	1 " .	26	Perkins & Ince Co., Peterboro.	.....	5·16	32·04	Broken tea leaves.....	39453	
" 23	" " .	39454	W. J. Roulty, Peterboro.	1 " ..	30	Balfourd & McLain, Hamilton.	....	5·02	35·48	"	39454	
" 23	" " .	39455	R. A. Dutton, Peterboro.	1 " ..	25	Wran Bros., Toronto..	....	5·90	37·84	Broken tea leaves and pieces of stem.	39455	

DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.

April	5	Tea, Black..	36202	John Young, Hamilton	1 lb ..	25	Balfour Smye & Co., Hamilton.	.....	....	5·38	34·40	Broken tea leaves and a few pieces of stem.	36202	
"	5	" Green.	36203	G.H. Williams, Hamilton.	1 " ..	30	W. H. Gillard & Co., Hamilton.	.....	....	5·94	28·76	Broken tea leaves.....	36203	Extractive low.
"	5	" Black.	36204	J. W. Jones, Hamilton	1 " ..	25	Lumsden Bros., Hamilton.	.....		5·38	29·48	"	36204	
"	8	" Green.	36205	John Bond & Co., Aurora.	1 " ..	25	Kearney Bros., Montreal.	.....	. .	6·20	26·48	"	36205	Extractive low
"	8	" Black.	36206	F. H. Prosser, Newmarket.	1 " ..	25	Canada Brokeage Co., Toronto.	.....	.	5·10	29·88	Broken tea leaves and some stems,	36206	
"	12	" " .	36207	M. J. Douglas, Bradford.	1 " .	25	Blue Ribbon Tea Co., Toronto.	"Blue Ribbon".		5·48	35·44	Broken tea leaves.....	36207	
"	13	" Green.	36208	John Cushman, Barrie	1 " ..	25	R. B. Hayhoe & Co., Toronto.	.....		6·74	29·44	" ...	26208	
"	13	" Black.	36209	J. M. Bothwell, Allandale.	1 " ..	25	Vendor.....	.....		5·38	33·36	Broken tea leaves and pieces of stem.	36209	
"	14	" " .	36210	Wm. McMulkin, Alliston.	1 " ..	30	Minto Bros., Toronto..	"Melagama" Black.		5·56	33·64	"	36210	
"	14	" " .	36211	J. J. McKnight Tottenham.	1 " ..	30	John Sloan & Co., Toronto.	"Salada".....		5·48	40·00	Broken tea leaves.....	36211	
"	16	" Green.	36212	Oliver McKay, Georgetown.	1 " ..	30	Minto Bros., Toronto..	"Melagama" Green.		5·30	41·68	"	36212	
"	17	" Black.	36213	J. S. Bond, Toronto ..	2 Pkgs	30	T. H. Esterbrooks, Toronto.	"Red Rose"....		5 00	33·24	" ...	36213	
"	17	" " .	36214	A. Browne, Toronto..	1 lb ..	30	J. Lumsden Co., Toronto.	... .		5·44	35·24	"	36214	
"	17	" " .	36215	A. E. Proctor, Toronto	2 Pkgs	40	H. P. Eckardt & Co., Toronto.	"Ludella".....		5·60	38·32	Broken tea leaves and some stems.	36215	
"	17	" Green.	36259	J. Thornton, Toronto.	1 lb ..	25	James Lumbers Co., Ltd., Toronto.	... .		5·74	40·04	Broken tea leaves.....	36259	

DISTRICT OF LONDON—T. J. KIDD, INSPECTOR.

Mar.	26	Tea, Mixed.	30597	White Packing Co., Stratford.	1½ lb .	45	T. H. Esterbrooks, St. John's, Newfoundland	"Red Rose". ..		5·20	32·56	Broken tea leaves.....	30597	
"	29	" Black	30602	T. S. Blees, Seaforth..	1½ " .	45	Howey, Stratford.....	"		5·12	30·32	"	30602	
"	31	" Mixed	30614	Mosish Linder, Goderich.	1½ " .	60	McEwin Bros., Goderich.	"Blue Ribbon".		5·30	31·64	"	30614	
"	31	" Black	30615	Mrs. J. Carroll, Goderich.	1½ " .	60	Blue Ribbon Tea Co., Montreal.	" ..		5·80	31·32	Broken tea leaves and pieces of stem.	30615	
"	1	" Mixed	30616	Poplestone & Gardner, Blyth.	1½ " .	39	" ..	" ..		5·58	29 16	Broken tea leaves. ...	30616	
"	1	" Black	30618	G. M. Chambers, Blyth	1 " .	40	W. H. Gillard, Hamilton.	"Aroma" Black		5·14	28·76	"	30618	Extractive low

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DISTRICT OF LONDON—T. J. KIDD, INSPECTOR—*Concluded.*												
1909.								p. c.	p. c.			
April 1	Tea, Black.	30621	Elman Moore, Wingham.	1½ lb.	45	Salada Tea Co., Toronto.	"Salada".....	6·36	29·20	Broken tea leaves and pieces of stem.	30621	
" 2	" " .	30623	Kerr & Birds, Wingham.	1½ " .	45	Unknown	"Liptons".. ...	5·40	26·24	Broken tea leaves.....	30623	Extractive low.
" 2	" Green .	30625	A. J. Malcolm, Wingham.	1 " .	25	Blue Ribbon Tea Co., Toronto.	"Blue Ribbon".	5·70	27·20	"	30625	Extractive low.
" 2	" Mixed.	30626	Waller Bros	1½ " .	60	H. P. Eckert & Co., Toronto.	"Ceylon".....	5·84	32·40	Broken tea leaves and pieces of stem.	30626	
" 2	" Black .	30627	N. Krotz, Listowell...	1 "	25	T. B. Escott & Co., London, Ont.	"Grand Mogul"	6·50	26·28	Broken tea leaves.	30627	Extractive low.
Mar. 26	" Mixed.	30599	McCulley & Haugh, Stratford.	1½ " .	45	Melthardy, Stratford..	.....	5·30	31·04	"	30599	
DISTRICT OF WINDSOR—JOHN TALBOT, INSPECTOR.												
April 5	Tea, Black.	34755	T. A. Rowat, London.	1 lb ..	25	Elliott & Mar, London	.....	5·48	31·08	Broken tea leaves and a few pieces of stem.	34755	
" 5	" Green .	34756	John Diprose, London	1 " ..	30	" ..	.....	5·54	34·60	Broken tea leaves.....	34756	
" 5	" Black .	34758	N. McLeod, London..	1 " ..	25	Balfour & Co., Hamilton.	.....	5·56	33·84	"	34758	
" 5	" Green .	34759	Kidner & Co., London	1 " ..	25	Ed. Adams & Co., London.	.....	7·04	31·60	"	34759	
" 5	" Black .	34760	F. G. Willis, London..	1 " ..	25	Estabrooks, Toronto..	.....	5·70	33·92	Broken tea leaves and a few pieces of stem.	34760	
" 5	" " .	34761	T. W. Vincent, London	1 " ..	30	" ...	.....	5·64	34·16	"	34761	
" 5	" Green .	34762	Mrs. Yates, London.	1 " ..	30	Scandrett Bros., London.	.....	6·40	36·92	Broken tea leaves.....	34762	
April 5	" Black .	34764	T. McKay..... ...	1 lb ..	25	Ed. Adams & Co., London.	.....	5·30	29·12	Broken tea leaves.....	34764	

"	5	"	" ..	34766	Rowntree & Fonger...	1 " ..	25	Haynoe, Toronto.....	.....	5·80	30·00	"	34766		
"	5	"	Green .	34767	H. Glach	1 " ..	25	A. M. Smith & Co., London.	.....	6·16	32·68	Broken tea leaves and a few pieces of stems	34767		
"	5	"	" .	34768	H. Marshall.....	1 " ..	25	M. Masurett & Co., London.	.....	5·84	31·01	Broken tea leaves.....	34768		
"	5	"	Black	34774	H. Fountaine.....	1 " ..	25	Unknown	.....	5 70	25·20	"	34774	Extractive low.	
"	6	"	" .	34775	F. Harley & Son.....	1 " ..	25	Balfour & McLaren, Hamilton.	.....	5·20	29·44	"	34775		
"	6	"	" .	34777	H. Ranahan.....	1 " ..	25	" ..	.....	5 14	25·36	"	34777	Extractive low.	
"	6	"	Green .	34778	Chas. Finchamp.....	1 " ..	25	M. Masurett & Co., London.	.....	6·10	29·28	Broken tea leaves and a few pieces of stems	34778		

DISTRICT OF MANITOBA—A. C. LARIVIERE, INSPECTOR.

April	19	Tea, Black .		35881	H. Fensom, Winnipeg	1 lb ..	40	Salada Tea Co	"Salada"	4·94	27·80	Broken tea leaves....	35881	Extractive low.	
"	19	" " .		35882	C. A. Breakwell, Winnipeg.	1 " ..	30	The Jobin Marrin Co., Winnipeg.	....	5·50	33·00	"	35882		
"	19	" " .		35883	T. R. Brough, Carberry	1 " ..	35	Unknown	....	5·70	30·32	Broken tea leaves and a few pieces of stems	35883		
"	21	" " .		35884	R. Beattie & Sons, Elmwood P.O., Winnipeg.	1 " ..	25	"	....	5·74	38·16	" " ..	35884		
"	21	" " .		35885	B. Moffet, Winnipeg..	1 " ..	25	Crook, Brown & Co., Winnipeg.	....	5·20	33·04	Broken tea leaves.....	35885		
"	21	" " .		35886	J. Braunstein, Winnipeg.	1 " ..	25	The Codville Co.	....	5·66	26·64	Broken tea leaves and a few pieces of stems	35886	Extractive low.	
"	23	" Dust ..		35887	S. J. Staples, Carman, Man.	1 " ..	15	Hunt & Co., Yokohama	....	6·70	30·20	Tea dust.....	35887		
"	24	" Black .		35888	P. D. Alair, Elm Creek, Man.	1 " ..	35	Campbell Bros., Wilson, Winnipeg.	"Royal Shield."	5·74	34·04	Broken tea leaves.....	35888		
"	24	" " .		35889	R. H. Staples, Elm Creek, Man.	1 " ..	40	G. F. & J. Galt, Winnipeg.	"Blue Ribbon" Red label Tea.	5·70	33·56	"	35889		
"	24	" " .		35890	Holliday & Simpson, Elm Creek, Man.	1 " ..	40	Unknown	....	5·60	26·20	Tea leaves and some pieces of stem.	35890	Extractive low.	
"	27	" " .		35891	J. T. Newberry, Napinka.	1 " ..	40	T. H. Estabrooks, St. John, N.B.	"Red Rose" ...	5·60	35·24	Broken tea leaves... .	35891		
"	28	" " .		35892	W. R. Shaefer, Winnipeg.	1 " ..	50	The Dyson Co., Winnipeg.	"Red Cross"...	6·00	37·54	Broken tea leaves and a few pieces of stems	35892		
"	28	" " .		35893	B. Adelman, Winnipeg	1 " ..	40	Unknown	....	5·54	36·32	Broken tea leaves and a few pieces of stems	35893		
"	28	" " .		35894	S. J. Deroche, Winnipeg.	1 " ..	40	"	... .	5 24	36·72	Broken tea leaves and stems.	35894		
	28	" " .		35895	S. Katz, Winnipeg....	1 " ..	40	The Jobin Marrin Co., Ltd., Winnipeg.	"Challenge"...	5·70	34·68	Broken tea leaves.....	35895		

BULLETIN No. 183—TEA.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion).	Results of Analysis. Total Ash	Extractive.	Microscopical Examination.	Number of Sample.	Remarks and Opinion of the Chief Analyst.
DISTRICT OF CALGARY—R. W. FLETCHER, INSPECTOR.												
1909.												
April 21	Tea, Black.	28959	A. Brandelli, Calgary.	1 lb	50	G. F. & J. Galt, Ltd., Calgary.		5·64	33·80	Broken tea leaves.	28959	
" 21	"	28960	Golden West Grocery, Calgary.	1 "	30	L. T. Mewburn & Co., Ltd., Calgary.		5·90	24·00	"	28960	Extractive low.
" 21	"	28961	W. Maitland, Calgary.	1 "	50	"		5·90	36·44	Broken tea leaves and pieces of stems.	28961	
" 21	"	28962	Mrs. Palmer, Calgary.	1 "	50	G. F. & J. Galt, Ltd., Calgary.		5·64	32·64	Broken tea leaves.	28962	
" 21	"	28963	Hallett & Longdons, Calgary.	1 "	35	W. W. Moore, Ltd., Calgary.		5·76	32·64	"	28963	
" 22	"	28964	S. G. Freeze, Calgary.	1 "	35	Balfour & McLaren, Hamilton.		5·10	31·76	"	28964	
" 22	"	28965	Peoples Co-operative Store, Calgary.	1 "	40	Wm. Davies & Co., Ltd., Toronto.		4·60	34·32	"	28965	
" 22	"	28966	J. T. Macdonald, Calgary.	1 "	40	Brooke, Bond & Co., London, Eng.		5·70	33·52	"	28966	
" 22	"	28967	Spen Bros., Calgary	1½ "	60	"		6·10	34·0	Broken tea leaves and pieces of stems.	28967	
" 22	"	28968	Watson Bros., Calgary	1 "	40	Jos. Tetley & Co., London, Eng.		4·84	33·76	Broken tea leaves and some pieces of stems.	28968	
" 22	"	28969	W. Verrier, Calgary.	1 "	35	L. T. Mewburn & Co., Ltd., Calgary.		5·70	33·68	"	28969	
" 22	"	28970	McLellan & Hawkes, Calgary.	1½ "	70	Georgeson & Co., Ltd., Calgary.		5·20	34·64	Broken tea leaves.	28970	
" 23	"	28971	Premium Tea Co., Ltd., Calgary.	1 "	25	L. T. Mewburn & Co., Ltd., Calgary.		5·58	32·28	"	28971	
" 23	"	28972	Copas & Emerson, Calgary.	1 "	40	Unknown		5·36	31·76	"	28972	
" 23	"	28973	C. J. Winn, Calgary.	1 "	50	G. F. & J. Galt, Ltd., Calgary.		5·86	27·32	"	28973	Extractive low.

DISTRICT OF VANCOUVER—J. F. POWER, INSPECTOR.

Mar.	24	Tea, Black..	37589	T. Russell, Vancouver	1 lb .	40	Kelly, Douglass & Co., Vancouver.	....	5·40	30·32	Broken tea leaves....	37589	
"	24	" ..	37590	C. L. Smith, Vancouver.	1 " ..	35	W. H. Malkin & Co., Vancouver.	....	5·24	32·44	"	37590	
"	24	" ..	37591	J. H. Atkins, Vancouver.	1 " ..	25	" ..	.. ..	5·24	30·20	Broken tea leaves and some pieces of stems.	37591	
"	24	" ..	37592	Pioneer Grocery, Vancouver.	1 " ..	25	Unknown	....	5·70	31·00	" " ..	37592	
"	24	" ..	37593	Glencoe Grocery, Vancouver.	1 " ..	30	Vancouver Tea Co., Vancouver.	.. . .	5·40	33·82	" " ..	37593	
"	24	" ..	37594	H. A. Edgett & Co., Vancouver.	1 " ..	25	W. H. Malkin & Co., Vancouver.	"The H. A. Edgett Special"..	5·70	32·48	Broken tea leaves.....	37594	
"	24	" ..	37595	Geo. Wagg, Vancouver	1 " ..	30	Wm. Braid & Co., Vancouver.	.....	5·52	32·64	"	37595	
Mar.	24	" ..	37596	McCulloch Bros., Vancouver.	1 lb ..	40	Galt Bros., Vancouver.	.....	5·34	29·00	Broken tea leaves.....	37596	
"	24	" ..	37597	S. Coranson, Vancouver.	1 " ..	35	Unknown	....	4·80	35·28	"	37597	
"	24	" ..	37598	Dukes Grocery, Vancouver.	1 " ..	35	Wm. Braid & Co., Vancouver.	"Dukes Special"	5·50	32·68	Broken tea leaves and some pieces of stem.	37598	
"	24	" ..	37599	Gem Grocery, Vancouver.	1 " ..	40	Ridgeways Ltd.....	....	5·36	31·12	Broken tea leaves.....	37599	
"	25	" ..	37600	J. A. McMillan, North Vancouver.	1 " ..	40	Balfour McLaren, Victoria.	....	5·66	23·52	Broken tea leaves and pieces of stem.	37600	Extractive low.
	25	" ..	37601	A. R. Steacy, Vancouver.	1 " ..	40	E. W. Leeson & Co., Vancouver.	....	5·48	28·08	Broken tea leaves and some pieces of stem.	37601	"
"	27	" ..	37602	London Grocery, Vancouver.	1 " ..	25	J. W. Berry, Vancouver.	....	5·46	29·44	Broken tea leaves and pieces of stem.	37602	
"	27	" ..	37603	A. & C. Grocery, Vancouver.	1 " ..	25	Young Bros., Vancouver.	....	5·54	26·00	Broken tea leaves and some pieces of stem.	37603	Extractive low.

DISTRICT OF VICTORIA—D. O'SULLIVAN, INSPECTOR.

April	27	Tea, Green..	39301	Windsor Grocery Co., Victoria, B.C.	1 lb ..	40	Baird & Co., Vancouver, B.C.	Young Hyson ..	6·20	35·08	Broken tea leaves.....	39301	
"	27	" Black..	39302	" ..	1 " ..	40	" ..	Broken Orange Pekoe Ceylon.	5·14	34·52	"	39302	
"	27	" " .	39303	Saunders Grocery Co., Ltd., Victoria, B.C.	1 " ..	25	" ..	" ..	5·40	32·08	Broken tea leaves and a few pieces of stem.	39303	
"	27	" Green..	39304	" ..	1 " ..	50	R. P. Rithet & Co., Victoria, B.C.	Young Hyson ..	5·64	34·72	Broken tea leaves.....	39304	
"	28	" Black..	39305	Copas & Young, Victoria, B.C.	1 " ..	30	Hudson Bay Co, Victoria.	Tetleys Tea.....	5·24	32·32	"	39305	
"	28	" "	39306	W. Speed, Victoria, B.C.	1 " ..	25	W. H. Malkin, Vancouver,	Foochow Congon Tea.	5·40	27·28	"	39306	Extractive low.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion).	Results of Analysis. Total Ash	Results of Analysis. Extractive.	Results of Analysis. Microscopical Examination.	Number of Sample.	Remarks and Opinion of the Chief Analyst.
DISTRICT OF VICTORIA—D. O'SULLIVAN INSPECTOR—*Concluded.*												
1909.								cts.	cts.			
April 28	Tea, Black..	39307	E. G. Bailey, Victoria, B.C.	1 " ..	30	Blomquist, Victoria...	....	5·60	25·40	Broken tea leaves and pieces of stem.	39307	Extractive low.
" 28	" " .	39308	F. E. Plummer, Victoria, B.C.	1 " ..	30	J. W. Berry, Vancouver.	India & Ceylon Black Tea.	5·48	36·80	Broken tea leaves and some pieces of stem.	39308	
" 28	" " .	39309	Fred Carne, Victoria, B.C.	1 " ..	25	W. A. Jameson Coffee Co., Victoria.	Black Ceylon. ..	4·90	34·04	Broken tea leaves.....	39309	
" 28	" " .	39310	Jalland Bros, Victoria, B.C.	1 " ..	25	R. P. Rithet & Co., Victoria.	The Rajah Ceylon Tea.	5·54	30·80	Broken tea leaves and pieces of stem.	39310	
" 28	" " .	39311	Acton Bros., Victoria, B.C.	1 " ..	35	Braid & Co., Vancouver.	Challenge Cup..	5·28	34·96	"	39311	
" 28	" " .	39312	Wm. B. Hall, Victoria, B.C.	1 " ..	30	" ..	.. ..	5·64	35·44	"	39312	
" 29	" " .	39313	W. A. Jameson Coffee Co., Victoria, B.C.	1 " ..	25	Balfour McLaren, Hamilton, Ont.	.....	4·88	28·52	Broken tea leaves.....	39313	Extractive low.
" 29	" " .	33314	Harrison & McDonald, Victoria, B.C.	1 " ..	25	Braid & Co., Vancouver.	....	5·20	30·84	"	39314	
" 29	" " .	39315	Vict. Rochdale Co-op. Assoc., Victoria, B.C.	1 " ..	35	W. H. Malkin, Vancouver.	....	5·48	34·20	Broken tea leaves and pieces of stem.	39315	

APPENDIX E.

BULLETIN No. 184—GROUND GINGER.

OTTAWA, July 16, 1909.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I beg to hand you a report concerning 150 samples of ground ginger, collected throughout Canada in April of the present year.

Previous reports upon ginger are found in Bulletins No. 48 (1896), No. 95 (1904) and No. 137 (1907). The following tabulation of results is interesting :—

	Total samples examined.	PERCENTAGES.		
		Genuine.	Adulterated.	Doubtful.
Bull. 48—1896	98	67	28	5
" 95—1904	10	60	40	0
" 137—1907	30	97	0	3
" 184—1909	150	65	21	14

The usual recognized adulteration of ginger consists in the substitution of cheaper materials (flour, starch, &c.) or in the use of exhausted rhizomes, i.e., stock from which the valuable principles have been more or less completely removed by washing. The examinations which form the basis for reports above referred to, have regard primarily to the detection of adulteration as described. But each report contains an account of more or less investigatory work, undertaken in the desire to put on record such data regarding ginger as should, at some future time, enable us to recommend the adoption of a definition of ginger, based upon its physical and chemical constants, and comprehensive enough to warrant its being made legal, under Section 26 of the Adulteration Act.

A definition of ginger recommended by the United States Food Standards Committee, is as follows :—'Ginger is the washed and dried or decorticated and dried, rhizome of *Zingiber* Zingiber (L) Karst., and contains not less than forty-two (42) per cent of starch, not more than eight (8) per cent of crude fibre, not more than six (6) per cent of total ash, not more than one (1) per cent of lime, and not more than three (3) per cent of ash insoluble in hydrochloric acid.'

'Limed ginger, bleached ginger, is whole ginger, coated with carbonate of lime, and contains not more than ten (10) per cent of ash, not more than four (4) per cent of carbonate of lime, and conforms in other respects to the standard for ginger.'

The British Pharmacopœia describes ginger as 'The scraped and dried rhizome of Zingiber officinale, Roscoe'; and gives the physical characters of the rhizome; but does not mention ground ginger, nor attempt any enumeration of chemical characters. (Edn 1898). Squire's Companion (Edn of 1908) gives the following tests for ginger :—The cells contain resin, (and) pyriform compressed starch grains 12 to 40 mcm. long, appearing linear when seen laterally, having the hilum at the smaller end; thin walled, polyzonal parenchymatous cells, and sometimes septate bast fibres with irregularly nodose extremeties. When unbleached yields 3 to 4 per cent ash, and 5 per cent should not be exceeded. Not less than 1·5 per cent soluble ash. Extractive matter to cold water usually about 10 per cent and should not be less than 8·5 per cent; the extractive matter soluble in 90 per cent alcohol usually amounts to about 5 per cent and should not be materially below this figure.'

It is apparent, from these citations, that we have but a very vague and indefinite knowledge of ginger; and it may be well to synopticize the main points brought out by the research work reported in the Bulletins from this laboratory.

Bulletin No. 48 contains photomicrographic reproductions of genuine and adulterated gingers, magnified 225 diameters, and seen under polarized light. The differences between ginger starch, and such starches as are commonly employed in adulteration of ginger, are well shown.

A synoptical table of published results in the chemical examination of ginger is furnished, and the following conclusion reached. 'An examination of these results shows that no single component of ginger is sufficiently constant in amount to make the identification of a sample as genuine possible by its means.'

Analytical numbers concerning 98 samples include moisture, cold water extractive, total ash; and in certain cases, petroleum ether and alcohol extractive, soluble ash, and alkalinity of ash.

Samples are only condemned as adulterated, in cases where foreign starch in amount exceeding 10 per cent is found

Bulletin No. 95 reports only 10 samples of ground ginger; giving moisture, cold water extractive and results of microscopic examination. One sample is condemned as containing wheat starch. Three others are called in question as giving only 14·1, 15·3, and 14·9 per cent extractive to cold water. These probably contain exhausted ginger, since similar extraction of genuine samples afforded nearly or quite 20 per cent of extractive. But it would be safer to describe these samples as 'doubtfully genuine' than as adulterated.

The details for cold water extraction of ginger are given (pp. 24 and 25), and the analyst adds:—'I have not met with an authenticated sample of ginger which gave less than about 19 per cent of extractive to cold water, when treated as described.'

Bulletin No. 137 reports upon 30 samples, of which 29 appear to be genuine, as judged by microscopic characters, and the cold water extractive, carried out by the process described above. Extraction amounts to above 20 per cent by weight on the dry ginger, in most samples: and in several reaches 24 per cent.

A consideration of all work recorded for ginger leads to the conclusion that microscopic examination and determination of cold water extractive are quite the most valuable tests that can be applied to the ground ginger of commerce Determination of ash is rendered comparatively valueless on account of the variability in methods of preparing ginger for the market. The rhizome may be merely washed, or it may be scraped, or decorticated or limed; and ground ginger may result from the grinding of rhizomes prepared in any or all of these ways. The total ash of 64 samples of ginger, believed to be genuine, reported in Bulletin 48, varies from 3·60 per cent to 7·14 per cent.

The ash of ginger consists partly of alkaline carbonates, which are soluble in water; partly of earthy carbonates, sulphates, and phosphates, insoluble in water but easily dissolved by hydrochloric acid, and partly of silicates and sand, insoluble in acid. Extraction of the ginger with water (which is one of the commonest forms of adulteration) has the effect of greatly reducing the amount of soluble ash, yielded by the sample, as shown in the following table:—

Number of Sample.	Effect of Water Extraction of Ginger upon the Amount and Character of the Ash.					
	Before Extraction.			After Extraction.		
	Total.	Water Soluble.	Ratio.	Total.	Water Soluble.	Ratio
37584	5·42	2·18	0·40	3·14	0·65	0 21
37587	4 65	1·98	0·42	2·25	0·30	0·13
39458	4·59	2 38	0·52	1·38	0 24	0 18
39464	3·63	1·86	0·51	0 98	0·15	0 15

A study of these results shows that the total ash is much reduced by previous extraction, as might be expected; and nearly 70 per cent of the diminution in amount is due to a reduction in water soluble ash.

Number of Sample.	Effect of Water Extraction of Ginger upon the amount and character of the ash.		
	Total ash reduced.	Soluble ash reduced.	Ratio p.c.
37584	2·28	1·53	69
37587	2·40	1·68	70
39458	3 21	2·14	67
39464	2 65	1·71	65

The samples of ginger upon which this work was done appear to be genuine, as evidenced by the microscopic examination, the cold water extractive, and other characters.

The presence of foreign starches or of flour in ground ginger will naturally reduce the total ash, since the normal ash of flour is less than one-half of one per cent, and that of starch practically nil. The ratio of soluble to total ash will be but little affected by addition of starch to a normal ginger.

In the absence of legal recognition of the value of this ratio in discriminating between normal and exhausted ginger, I am unable to make use of it in judging the genuineness of the samples now reported; but I have noted all cases where the ratio falls beyond the limits 0·40 to 0·70, as '*abnormal*.' When the total ash exceeds 6 per cent I have noted 'ash high'; when below 3 per cent I have noted 'ash low.' These terms cannot be regarded as having legal value in establishing the character of the article.

Of course the amount of extractive to cold water will be affected by the method of carrying out the extraction. This is described in Bulletin No. 95, p. 24, as it was employed by me in the work recorded in Bulletins 95 and 137. It involved the use of a mechanical shaker and centrifuge, and genuine gingers yielded about 20 per cent of extractive. The cold water extraction, as now reported, has been made by treating 5 grammes of the sample with 250 cc. of water, in a glass flask, which is shaken by hand at intervals of half an hour during eight hours; allowed to stand over night when an aliquot part by volume of the solution is evaporated in platinum to constant weight. This method is less effective in exhausting the ginger, but has the advantage of being available in laboratories not equipped with the mechanical devices required for carrying out the first method described. The normal extractive, by this method, appears to be about 15 or 16 per cent of the weight of the ginger (dry).

It is interesting to note that the low extractive recorded in the accompanying table, for certain samples, is usually correlated to the presence of foreign starchy matters. Where a low extractive is not explained by presence of foreign starch, the only explanation available would seem to be the previous extraction of the rhizome.

The requirements of the British Pharmacopœia in the matter of extractive would appear to be entirely too low.

I beg to recommend the publication of this report as Bulletin No. 184.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion).
							DISTRICT OF NOVA SCOTIA—
1909.							
April 14	Ground Ginger..	33902	Larder, Hubley & Co., Halifax, N.S.	¾ lb ..	30	Todhunter, Mitchell & Co., Toronto.	.....
" 14	" ..	33903	Knock & Nicolle, Halifax, N.S.	¾ " ..	21	John P. Mott & Co., Halifax, N.S.	Labelled "Strictly Pure."
" 14	" ..	33904	R. W. McDonald, Halifax, N.S.	¾ " ..	18	Robt. Greig Co., Toronto.	.....
" 14	" ..	33905	E. B. Tracey, Halifax, N.S.	¾ " ..	24	C. H. Cochrane, Ottawa.	"Pure Jamacia"
" 15	" ..	33906	Jas. Scott & Co., Halifax, N.S.	¾ " ..	30	W. H. Schwartz & Son, Halifax.	.....
" 15	" ..	33907	E. Donahoe & Son, Halifax, N.S.	¾ " ..	21	" ..	Labelled "Pure"
" 15	" ..	33908	Dillon Bros., Halifax, N.S.	¾ " ..	21	J. P. Mott & Co., Halifax.	Labelled "Strictly Pure."
" 15	" ..	33909	W. E. Ford, Halifax, N.S.	¾ " ..	20	S. H. Ewing, Montreal	Standard ginger.
" 15	" ..	33910	W. J. Hopgood & Son, Halifax, N.S.	¾ " ..	24	W. H. Schwartz & Sons, Halifax.	Labelled "Pure"
" 23	" .	33926	S. Thomson, Dartmouth, N.S.	¾ " ..	24	Jno. P. Mott & Co., Halifax.	Labelled strictly pure.
							DISTRICT OF PRINCE EDWARD ISLAND—
April 7	Ground Ginger..	31473	R. T. Holman, Ltd., Summerside.	¾ lb ..	24	Dearborn & Co., St. John, N.B.	Guaranteed absolutely pure.
" 7	" ..	31474	Brace & McKay, Summerside.	¾ " ..	21	Pure Gold Mfg. Co., Toronto.	.....
" 7	" ..	31475	McGougan & Wright, Summerside.	¾ " ..	24	J. P. Mott & Co., Halifax.	Guaranteed strictly pure.
" 8	" .	31476	J. A. Hynes, Kensington.	¾ " ..	30	G. E. Barbour & Co., Ltd., St. John, N.B.	" ..
" 12	" ..	31477	R. A. McCarthy, Mount Stewart.	¾ " ..	24	Carvell Bros., Charlottetown.	" ..
" 13	" ..	31478	A. McLean & Co., Georgetown.	¾ " ..	24	The Robt. Greig Co., Ltd., Toronto.	Greig's "White Swan" Brand.
" 13	" ..	31479	J. H. Myrick, Charlottetown.	¾ " ..	21	Carvell Bros., Charlottetown.	.....
" 13	" ..	31480	W. S. Brown, Charlottetown.	¾ " ..	24	W. H. Schwartz & Sons, Halifax.	.....
" 13	" ..	31481	M. Duffy & Son, Charlottetown.	¾ " ..	30	J. A. Farquharson, Charlottetown.	.....
" 13	" ..	31482	Moore & Francham, Charlottetown.	¾ " ..	30	N. Rattenbury, Charlottetown.	Perfection brand guaranteed absolutely pure.
							DISTRICT OF NEW BRUNSWICK—
Mar. 23	Ground Ginger..	29907	G. E. Barbour Co., Ltd., St. John, N.B.	3 Pkts	24	Vendors.....	"Acorn" strictly pure Jamacia Ginger.
" 24	" ..	29908	Chas. A. Clark, St. John, N.B.	¼ lb ..	30	Dearborn & Co., St. John, N.B.	....
April 6	" ..	29909	Estate of G. T. Whelpley, Fredericton, N.B.	3 Pkts	30	Pure Gold Mf'g. Co., Toronto, Ont.	Whelpley's 'High Grade' Pure Ginger.

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GROUND GINGER.

Ash.			Results of Analysis.					Remarks and Opinion of the Chief Analyst.
Total.	Water Soluble	Ratio.	Moisture.	Cold Water Extractive. Normal	Cold Water Extractive. Calculated to dry Ginger	Microscope.	Number of Sample.	
R. J. WAUGH, INSPECTOR.								
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.			
4·67	2·40	·51	9·94	13·08	14·52	Genuine	33902	
4·35	2·25	·52	10·02	11·70	13·00	"	33903	Extractive low. Doubtful.
3·05	1·57	·51	9·57	13·40	14·82	Wheat, maize, rice, 35 p.c.	33904	Adulterated.
4·82	2·22	·46	10·35	13·20	14·73	Genuine	33905	
4·30	2·40	·56	10·26	15·38	17·14	"	33906	
4·83	2·69	·56	9·82	14·84	16·46	"	33907	
4·37	2·61	·60	9·39	12·95	14·30	"	33908	
3·93	1·70	·43	10·11	11·70	13·01	Wheat starch, 25 p.c.	33909	Extractive low. Adulterated.
3·93	2·17	·55	9·98	15·68	17·42	Genuine	33910	
4·74	2·46	·52	10·49	13·35	14·92	"	33926	
THEO. MOORE, INSPECTOR.								
4·13	1·81	·44	10·51	10·00	11·17	Genuine	31473	Extractive low. Doubtful.
4·84	2·82	·58	9·91	14·02	15·56	"	31474	
4·53	2·63	·58	10·60	12·57	14·06	"	31475	
5·13	2·56	·50	10·22	14·65	16·32	"	31476	
5·39	2·91	·54	9·66	14·00	15·50	"	31477	
3·63	2·12	·58	10·36	18·30	20·41	"	31478	
6·82	3·13	·46	9·42	15·90	17·55	"	31479	
2·91	1·84	·63	10·06	13·15	14·62	Wheat and maize, 30 p.c.	31480	Ash low. Adulterated.
·96	1·73	·58	9·96	13·33	14·80	Maize starch, 15 p.c.	31481	Adulterated.
·92	1·66	·42	9·75	10·65	11·80	Genuine	31482	Extractive low. Doubtful.
J. C. FERGUSON, INSPECTOR.								
3·65	2·44	·67	9·25	16·30	17·96	Genuine	29907	
5·20	2·37	·46	9·56	12·84	14·20	"	29908	
3·30	2·48	·75	9·80	18·38	20·38	"	29909	

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion).
						DISTRICT OF NEW BRUNSWICK—	
1909.							
April 8	Ground Ginger..	29910	D. R. Bedell, Andover, N.B.	3 Pkts	24	G.E.BarbourCo.,Ltd., St. John, N.B.	"Acorn".....
" 10	" ..	29911	F. D. Sadler, Perth, N.B.	¾ lb ..	30	S. H. Ewing & Sons, Montreal.	'PrinceofWales'
" 10	" ..	29912	The Geo. T. Baird Co., Ltd., Perth, N.B.	¾ " ..	24	Dearborn & Co., St. John, N.B.	"Perfection"...
" 14	" ..	29913	The Sussex Mercantile Co., Ltd., Sussex, N.B.	¾ " ..	21	G.E.BarbourCo.,Ltd., St. John, N.B.	"Acorn".....
" 14	" ..	29914	Denis Richard, Moncton, N.B.	¾ " ..	24	F. P. Reid & Co., Moncton, N.B.	"Pyramid"....
" 17	" ..	29915	S. Williamson, Bathurst, N.B.	¾ " ..	24	H. W. Cole Ltd., St. John, N.B.	"Thistle" ....
" 19	" ..	29916	B. A. Mowat, Campbellton, N.B.	¾ " ..	19	" ..	.....
						DISTRICT OF QUEBEC—	
April 21	Ground Ginger..	36883	T. Farlardeau, Quebec.	¾ lb ..	30	Langlois & Paradis, Quebec.	....
" 21	" ..	36884	C. T. Boily, Quebec.	3 Pkts	15	" ..	.....
" 21	" ..	36885	F. X. Goslin, Quebec	3 " .	15	H. Blouin, Quebec. ..	....
" 21	" ..	36886	LouisNadeau,Quebec	¾ lb ..	30	Unknown..	... .
" 22	" ..	36887	A. Pouliot, Quebec..	¾ " ..	30	W. Brunette & Cie., Quebec.	....
" 22	" ..	36888	E. Emond, Quebec..	¾ " ..	30	Unknown..	.....
" 22	" ..	36889	L. A. Warren, Quebec.	3 Pkts	15	" ..	. .....
" 22	" ..	36890	Denis Davis, Quebec	¾ lb ..	23	" ..	... .
" 22	" ..	36891	A. Turcotte, Quebec.	¾ " ..	23	E. Montreuil, Quebec.	....
" 22	" ..	36892	T. E. Gregoire, Quebec.	¾ " ..	30	Drouin & Freres, Quebec.	... .
						DISTRICT OF ST. HYACINTHE—	
April 19	Ground Ginger..	1017	T. A. Bourgault, Drummondville.	¾ lb ..	30	Mayell & Co., Toronto	.....
" 20	" ..	1018	F. X. Giroux, Farnham.	¾ " ..	30	J. A. Mathewson & Co., Montreal.	Pure Jamaica ginger.
" 21	" ..	1019	R. Goold, St. Jean..	¾ " ..	30	Unknown.....	.....
" 23	" ..	1020	W. D. Bradford, Granby.	¾ " ..	22	"	.....
" 23	" ..	1021	A. Bussiere, Abbotsford.	¾ " ..	25	L. Chaput fils & Cie, Montreal.	Guaranteed pure Jamaica.
" 26	" .	1022	H. Ledoux, Beloil...	¾ " .	23	Hudon & Orealı.....	.....

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GROUND GINGER.

Ash			Results of Analysis.				Number of Sample.	Remarks and Opinion of the Chief Analyst.
Total.	Water Soluble	Ratio.	Moisture.	Cold Water Extractive. Normal	Cold Water Extractive. Calculated to dry Ginger	Microscope.		
J. C. FERGUSON, INSPECTOR—*Concluded.*								
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.			
4·50	2·31	·51	9·76	14·84	16·45	Genuine	29910	
4·95	2·37	·48	9·32	13·90	15·33	"	29911	
3·76	1·63	·44	9·53	13·05	14·43	"	29912	
4·36	2·24	·51	9·66	15·09	16·70	"	29913	
4·54	1·99	·44	10·05	13·15	14·62	"	29914	
3·48	2·02	·58	9·42	14·77	16·31	Small amount of wheat starch.	29915	Doubtful.
3·47	2·02	·58	10·04	14·72	16·36	"	29916	"
E. BELAND, INSPECTOR.								
2·63	0·79	·30	9·98	8·20	9·11	Genuine	36883	Ash abnormal, low. Extractive very low. Doubtful.
2·58	0·62	·24	9·91	5·25	5·83	"	36884	"
6·95	1·41	·20	8·60	13·41	14·67	"	36885	Ash insoluble in HCl. = 1·15. Ash abnormal. Ash high. Extractive low. Doubtful.
4·83	2·82	·58	9·12	14·36	15·80	"	36886	
3·89	2·30	·59	9·49	16·35	18·06	"	36887	
1·82	0·74	·41	10·18	7·20	8·02	Maize starch, 15 p.c.	36888	Ash low. Extractive low. Adulterated.
2·56	1·09	·42	8·54	5·84	6·38	Foreign matters, much	36889	"
2·29	0·33	·14	9·65	5·77	6·38	Maize starch, 50 p.c.	36890	Ash abnormal, low. Extractive low. Adulterated.
2·48	0·74	·30	10·26	7·10	7·91	" 10 p.c.	36891	Ash abnormal, low. Extractive low. Doubtful.
2·02	0·59	·29	10·25	7·50	8·36	" 30 p.c.	36892	Ash abnormal, low. Extractive low. Adulterated.
J. C. ROULEAU, INSPECTOR.								
5·00	2·70	·54	9·35	13·50	14·90	Genuine	1017	
5·53	1·64	·29	9·33	13·15	14·51	Wheat starch, 15 p.c.	1018	Ash abnormal. Adulterated.
3·63	2·53	·69	9·61	17·00	18·81	Genuine	1019	
4·68	2·39	·51	8·48	13·80	15·08	"	1020	
3·34	2·59	·75	9·71	15·60	17·28	"	1021	
6·61	0·96	·14	8·70	12·45	13·64	Foreign tissues, not identified.	1022	Ash insol. in HCl. = 1·01. Ash abnormal; high. Adult'd.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion).
						DISTRICT OF ST. HYACINTHE—	
1909.							
April 28	Ground Ginger..	1023	Jos. Hamel, Roxton Falls.	¾ lb ..	27	Hudon & Orsali.....	.....
May 5	" ..	1024	J. E. Blais, E. Sherbrooke.	¾ " ..	30	Herron, Leblanc & Co., Montreal.	.....
" 6	" ..	1025	W. E. Hetherington, Sherbrooke.	¾ " ..	30	Mayell & Co., Toronto ...	.....
" 18	" ..	1026	A. Desmarais, Pierreville.	¾ " ..	20	Unknown.....	.....
						DISTRICT OF MONTREAL—	
Mar. 22	Ground Ginger..	40001	J. B. Therein, Montreal.	3 tins.	25	The Brodie Mfg. Co., Montreal.	.....
" 22	" ..	40002	The Brodie Mfg. Co., Montreal.	1 lb ..	20	Vendors..	.....
" 27	" ..	40003	J. J. Duffy & Co., Montreal.	3 pkgs	20	"	.....
April 15	" ..	40004	" " ..	¾ lb ..	20	"	.....
" 28	" ..	40005	E. Lavigne, Lachute, P.Q	¾ " ..	30	Thos. Barrow, Shrewsbury.	.....
" 28	" ..	40006	G. L. Meikle, Lachute, P.Q.	¾ " .	30	.....	.....
May 3	" ..	40007	Heron Leblanc Co., Ltd., Montreal.	¾ " ..	19	Vendors.....	.....
" 6	" ..	40008	C. E. Laflamme, St. Jerome.	¾ " ..	35	Hudon, Hebert & Cie.	.....
" 12	" ..	40009	A. Martel, Montreal	¾ " ..	30	J. V. Boudrais, Montreal.	.....
" 12	" ..	40010	A. Genereau, Montreal.	¾ " ..	30	S. H. Ewing & Sons Montreal.	.....
						DISTRICT OF OTTAWA—	
Mar. 19	Ground Ginger..	22926	McCallum & Lahaie, Buckingham.	¾ lb ..	23	White Swan Spice & Cereals Ltd., Toronto	Sold as ground ginger.
" 19	" ..	22927	W. J. Martin, Buckingham,	¾ " ..	23	Unknown.....	" ..
" 22	" ..	22928	G. F. Hodgins, Shawville.	¾ " ..	22	Pure Gold Mf'g. Co., Toronto.	" ..
" 23	" ..	22929	A. D. Wishart, Renfrew.	¾ " ..	23	The Fielding Chem. Co., Guelph.	" ..
" 24	" ..	22930	J. E. Duhaime, Ottawa.	¾ " ..	25	Unknown.....	" ..
" 24	" ..	22931	Wm. R. Cummings, Cummings Bridge.	¾ " .	30	S. J. Major Ltd., Ottawa.	" ..
" 24	" ..	22932	W. Schwitzer, Ottawa.	¾ " ..	22	F. J. Castle Co., Ottawa.	" ..
" 26	" ..	22933	Jas. Herbert, Ottawa	¾ " ..	25	Unknown...	" ..
" 26	" ..	22934	M. J. Laverdure, Hull	¾ " ..	30	Pure Gold Mf'g. Co., Toronto.	" ..
" 27	" ..	22935	M. Joyce, Quyon, P.Q	¾ " ..	20	Provost & Allard, Ottawa.	" ..

SESSIONAL PAPER No. 14

GROUND GINGER.

Ash.			Results of Analysis.				Number of Sample.	Remarks and Opinion of the Chief Analyst.
Total.	Water Soluble	Ratio.	Moisture.	Cold Water Extractive. Normal	Cold Water Extractive. Calculated to dry Ginger	Microscope.		
J. C. ROULEAU, INSPECTOR—*Concluded.*								
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.			
10·54	8·49	·80	8·43	16·00	17·47	Foreign matters, 50 p.c.	1023	Ash insol. in HCl. = 0·20. Ash abnormal ; high. Adult'd.
2·76	1 23	·45	10·49	12·73	14·22	Maize, starch, &c., 35 p.c.	1024	Ash low. Adulterated.
4·78	2 37	·49	9·83	12·70	14·08	Genuine	1025	
3·82	1·56	·41	10·16	9·40	10·46	Maize starch, small quantity.	1026	Extractive low. Doubtful.
J. J. COSTIGAN, INSPECTOR.								
2 61	0·87	·33	10·08	7·42	8·25	Maize starch, 20 p.c.	40001	Ash abnormal ; low. Extractive low. Adulterated.
6·77	1·38	·20	9·61	15·50	17·15	Genuine	40002	Ash insol. in HCl. = 1·30. Ash abnormal ; high.
3·35	1·59	·48	9·50	10 80	11 93	"	40003	Extractive low. Doubtful.
3·18	1·96	·62	9·72	12·54	13·89	"	40004	" "
1·42	0·54	·38	9 50	6·32	6·98	Very large quantity rice starch and some wheat.	40005	Ash low. Extractive low. Adulterated.
4·15	2·32	·56	9·57	14·03	15·51	Genuine	40006	
4·17	2·33	·56	9·24	15·18	16 72	"	40007	
1·48	0·58	·39	9·61	8·05	8 90	Maize starch, 40 p.c.	40008	Ash low. Extractive low. Adulterated.
4·50	2·70	60	9 95	11·79	13 10	Foreign matters, rice, &c.	40009	Extractive low. Adulterated.
4·28	2·19	·51	9·29	13·01	14·27	Genuine	40010	
J. A. RICKEY, INSPECTOR.								
2·74	1·20	·44	10·28	14·69	16·37	Wheat and maize starch, 20 p.c.	22926	Ash low. Adulterated.
4·12	2·76	·67	9·67	16·75	18·54	Genuine	22927	
5·60	2·39	·43	9·91	14·30	15·87	"	22928	
4·13	2·97	·72	10·08	16·14	17·95	"	22929	
2·58	1·07	·41	10·04	7·08	7·87	Maize starch, 40 p.c.	22930	Ash low. Extractive low. Adulterated.
3·38	1·04	·31	9·96	11·30	12·55	Wheat starch, 30 p.c. and turmeric.	22931	Ash abnormal. Adulterated.
2·67	1·11	·42	10 00	6·90	7·67	Maize starch, 50 p.c.	22932	Ash low. Extractive low. Adulterated.
3·43	1·06	·31	10·00	11·08	12·31	Wheat starch, 30 p.c. and turmeric.	22933	Ash abnormal. Adulterated.
4 20	2 18	·52	10·02	15·15	16·84	Genuine	22934	
5·17	2·54	·49	9·68	13·26	14·68	"	22935	

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion).
						DISTRICT OF KINGSTON—	
1909.							
Mar. 17	Ground Ginger..	39456	Geo. Gibson, Kingston.	¾ lb ..	30	White Swan Co., Toronto.	.....
" 17	" ..	39457	J. A. Haffner, Kingston.	¾ " ..	30	Fenwick Hendry Co., Kingston.	.....
" 17	" ..	39458	J. McCulla, Kingston	¾ " ..	30	Todhunter & Mitchel, Toronto.	.....
" 17	" ..	39459	J. Lemmon, Kingston	¾ " ..	23	Unknown.....	.....
" 17	" ..	39460	J. A. Donaldson, Kingston.	¾ " .	20	"	.....
" 17	" ..	39461	A. T. Morris, Kingston.	¾ " ..	20	Dalton, Toronto.....	.....
" 18	" ..	39462	H. M. Stover, Kingston.	¾ " ..	30	A. McLean, Kingston	.....
" 18	" ..	39463	C. Litton, Kingston	¾ " ..	20	C. H. Cochrane & Co., Ottawa.	.....
" 22	" ..	39464	J. Harker, Belleville	¾ " ..	30	White Swan, Toronto.	.....
" 22	" ..	39465	Guilbt Bros., Coburg	¾ " ..	38	Grig Co., Toronto....	.....
						DISTRICT OF TORONTO—	
April 5	Ground Ginger..	36216	W. Durance, Hamilton	¾ lb ..	25	Young & Winfield, Hamilton.	Ground Ginger..
" 7	" ..	36217	C. C. Baird, Hamilton.	¾ " ..	30	Dalton Bros., Toronto	Jamaica Ginger.
" 8	" .	36218	T. H. Broad, Aurora	¾ " ..	30	J. M. Lowes Co., Ltd., Toronto.	Pure Jamcia Ginger.
" 8	" ..	36219	Joseph Purdy, Newmarket.	¾ " ..	30	Lumsden Bros, Hamilton.	Fine Family Ginger.
" 12	" ..	36220	W. D. Watson, Bradford.	¾ " ..	30	R. B. Hayhoe & Co., Toronto.	Golden Brand Pure.
" 13	" ..	36221	A. Leadlay, Barrie..	¾ " ..	24	F. E. Ramsay Co., Toronto.	"Horseshoe"....
" 14	" .	36222	J. E. Paddison, Alliston.	¾ " ..	24	F. W. Humphrey, Toronto.	"Bison".....
" 16	" ..	36223	L. Kennedy, Georgetown.	¾ " ..	22	John Sloan & Co., Toronto.	Sloan's Defiance, Pure.
" 17	" ..	36224	R. Kirkpatrick, Toronto.	¾ " .	27	R. B. Hayhoe & Co., Toronto.	.....
" 17	" .	36225	J. Simpson & Son, Toronto.	¾ " ..	23	Pure Gold Mf'g. Co., Toronto.	Labelled Ginger.
						DISTRICT OF LONDON—	
Mar. 26	Ground Ginger..	30596	Oman Mallion, Stratford.	¾ lb ..	23	Canada Grocery Co., London, Ont.	.....
" 26	" ..	30598	Edward O'Flaherty, Stratford.	¾ " ..	30	Edward Adams, London, Ont.	.....
" 26	" ..	30600	A. Beattie & Co, Stratford.	¾ " ..	30	Hamilton Coffee & Spice Co., Hamilton	.....
" 29	" ..	30601	Chas. Andrews, Seaforth.	¾ " ..	30	A. M. Smith & Co., London, Ont.	.....
" 29	" .	30603	Mathew Williams, Seaforth.	¾ " ..	30	John Slone, Toronto..	.....

SESSIONAL PAPER No. 14

GROUND GINGER.

Ash.			Results of Analysis.				Number of Sample.	Remarks and Opinion of the Chief Analyst.
Total.	Water Soluble	Ratio.	Moisture.	Cold Water Extractive. Normal	Cold Water Extractive. Calculated to dry Ginger	Microscope.		
JAS. HOGAN, INSPECTOR.								
p.c.	p.c.	p.c.	p.c.	p.c.	p.c.			
2·84	1·50	·53	9·69	13·68	15·15	Maize and wheat starch, 15 p.c.	39456	Ash low. Adulterated.
2·82	1·13	·40	10·06	10·80	12·01	Maize and wheat starch, 30 p.c.	39457	" "
4·59	2·38	·52	10·12	14·60	16·24	Genuine	39458	
4·23	0·37	·09	9·04	14·35	15·78	Maize and wheat starch, much.	39459	Ash abnormal. Adulterated
4·19	2·10	·50	9·71	12·45	13·79	A little maize starch	39460	Doubtful.
3·43	1·27	·37	9·68	11·72	12·97	Genuine	39461	Extractive low. Doubtful.
5·51	2·70	·49	9·47	14·73	16·27	"	39462	
3·36	2·43	·72	9·41	16·50	18·22	"	39463	
3·63	1·86	·51	10·24	16·56	18·45	"	39464	
3·73	2·16	·58	10·12	14·80	16·47	"	39465	
H. J. DAGER—INSPECTOR.								
4·36	2·02	·46	9·55	13·48	14·90	Genuine	36216	
2·24	1·31	·59	9·46	10·52	11·62	Maize starch, 40 p.c.	36217	Ash low. Adulterated.
4·70	2·82	·60	9·54	15·03	16·62	Gennine	36218	
3·58	2·21	·62	9·35	16·06	17·72	"	36219	
4·04	2·48	·61	10·00	15·05	16·72	"	36220	
3·83	1·85	·49	10·03	11·96	13·30	Much maize starch and other foreign matter.	36221	Adulterated.
2·90	1·12	·39	9·29	13·88	15·30	Maize starch, 25 p.c.	36222	Ash low. Adulterated.
2·27	1·01	·45	9·90	12·75	14·15	" 15 p.c.	36223	" "
4·34	2·09	·48	9·46	12·66	13·98	Genuine	36224	
4·28	2·28	·53	8·85	15·95	17·50	"	36225	
T. KIDD, INSPECTOR.								
6·20	2·56	·41	10·49	13·82	15·44	Genuine	30596	CaO = 0·94; Ash insol. in HCL = 0·51 Ash high.
4·43	2·41	·54	9·91	13·38	14·85	"	30598	
4·52	2·36	·52	10·20	13·58	15·12	"	30600	
4·89	2·67	·54	9·86	13·42	14·89	"	30601	
3·81	1·37	·36	9·82	11·73	13·01	"	30603	Ash abnormal. Doubtful.

BULLETIN No. 184—

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion.
							DISTRICT OF LONDON—
1909.							
Mar. 31	Ground Ginger..	30610	Chas. Nairn, Goderich	¾ lb ..	30	Canada Spice Co., London, Ont.	....
" 31	" ..	30611	O. C. Whitley, Goderich.	¾ " ..	30	A. M. Smith & Co., London, Ont.	.....
April 1	" ..	30617	Jas. Cutt, Blyth....	¾ " ..	30	Canada Spice & Grocery Co., London, Ont.	.....
" 1	" ..	30620	W. Bone, Wingham.	¾ " ..	30	Elliot Marr & Co., London, Ont.	.....
" 2	" ..	30624	J. H. Christie, Wingham.	¾ " ..	30	Todhunter & Mitchell, Toronto.	....
							DISTRICT OF WINDSOR—
April 5	Ground Ginger..	34757	J. Straitch, London.	¾ lb ..	30	Gorman, Eckert & Co., London, O.	... .
" 5	" ..	34763	A. G. Lyons.....	¾ " ..	25	" ..	.....
" 5	" ..	34765	T. W. Sanborn	¾ " ..	30	" ..	.....
" 5	" ..	34769	Duncan Bros	¾ " ..	25	Canada Spice and Grocery Co , London, O.	... .
" 5	" ..	34770	Cahoon & Patterson.	¾ " ..	30	Gorman, Eckert & Co., London, O.	.....
" 5	" ..	34771	S. W. Johnston.....	¾ " ..	25	" ..	.....
" 5	" ..	34772	W. Hayes....	¾ " ..	25	" ..	.....
" 5	" ..	34773	G. & O. Bong.....	¾ " ..	20	" ..	....
" 6	" ..	34776	Mrs. Geo. Armstrong	¾ " ..	25	Canada Spice and Grocery Co., London, O.	....
" 6	" ..	34779	F. C. Toon	¾ " ..	25	Gorman, Eckert, & Co., London, O.	....
							DISTRICT OF MANITOBA—
April 19	Ground Ginger..	35871	D. Koffman, Winnipeg.	3 pks.	25	Campbell Bros. & Wilson, Winnipeg.	"Royal Shield."
" 19	" ..	35872	W. H. English, Carberry.	½ lb.	20	Unknown.....	....
" 23	" ..	35873	I. L. Raymond, Carman, M.	3 pks.	30	Gorman, Eckert & Co., London, Ont.	..... .
" 26	" .	35874	A. H. Atkinson, Deloraine, M.	¾ lb ..	20	Unknown	....
" 26	" ..	35875	Stevens & Son, Deloraine, M.	¾ " ..	30	"	.....
" 27	" ..	35876	The Macleod Hamlin Co., Napinka.	3 pks.	30	The Blue Ribbon, Ltd., Winnipeg.	"Blue Ribbon."
" 27	" ..	35877	Kaiser & Dunning, Napinka.	3 " ..	30	McLaren, Ltd., Hamilton.	"Thistle".....
" 28	" ..	35878	Tessman & Co., Winnipeg.	¾ lb ..	20	Unknown	.....
" 29	" ..	35879	O. Hughes, Winnipeg.	3 pks.	30	The Blue Ribbon, Ltd., Winnipeg.	"Blue Ribbon."
" 29	" ..	35880	Whelpley's Dept. Store, Winnipeg.	3 " ..	30	The White Star Mfg. Co., Winnipeg.	"The White Star."

SESSIONAL PAPER No. 14

GROUND GINGER.

Ash.			Results of Analysis.				Number of Sample.	Remarks and Opinion of the Chief Analyst.
Total.	Water Soluble	Ratio.	Moisture.	Cold Water Extractive. Normal	Cold Water Extractive. Calculated to dry Ginger	Microscope.		
T. KIDD, INSPECTOR—*Concluded.*								
p.c.	p.c.	p.c.	p.c.	p.c.	p.c.			
3·18	2·14	·67	10·29	15·24	16·99	Genuine.....	30610	
5·08	2·54	·50	9·80	14·96	16·58	"	30611	
5·79	2·72	·47	10·75	14·90	16·70	"	30617	
6·16	3·04	·49	10·44	14·94	16·68	"	30620	CaO=0·56: Ash insol. in HCL =0·61 Ash high.
4·23	2·70	·64	9·75	17·65	19·56	"	30624	
JNO. TALBOT, INSPECTOR.								
3·99	2·68	·67	10·28	14·54	16·20	Genuine	34757	
4·02	2·57	·64	10·07	14·05	15·62	"	34763	
5·16	2·53	·49	9·92	14·82	16·08	"	34765	
5·91	2·70	·46	10·63	14·75	16·50	"	34769	
5·07	2·32	·46	10·13	14·62	16·27	"	34770	
5·14	2·47	48	10·22	14·33	15·96	"	34771	
3·19	2·10	·66	10·12	16·77	18·66	"	34772	
4·26	2·41	·56	9·76	14·68	16·27	"	34773	
5·83	2·42	·41	10·70	14·17	15·87	"	34776	
5·13	2·31	·45	9·97	14·10	15·66	"	34779	
A. C. LARIVIERE, INSPECTOR.								
3·95	1·72	·44	9·94	13·27	14·73	Genuine	35871	
4·11	1·96	·48	9·86	15·61	17·32	"	35872	
4·60	2·06	·45	10·32	12·14	13·54	"	35873	
3·52	2·06	·59	9·95	13·95	15·50	"	35874	
3·97	1·51	·39	9·67	11·75	13·01	Wheat starch, 20 p.c.....	35875	Adulterated.
3·20	2·26	·71	9·25	15 60	17·19	Genuine	35876	
5·47	2·72	·49	9·98	13·95	15·50	"	35877	
2·43	1·16	·48	9·69	10·50	11·63	Wheat starch, &c., 50 p.c.	35878	Ash low. Extractive low Adulterated.
4·09	2·77	·67	9·43	15·51	17·13	Genuine	35879	
5·61	1·91	·34	10·69	11·07	12·40	Foreign matter, rice, &c., 5 p.c.	35880	Ash abnormal. Doubtful.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).
						DISTRICT OF CALGARY—	
1909.							
April 21	Ground Ginger..	28974	A. Brandelli, Calgary	3 tins.	30	G. F. & J. Galt, Ltd., Calgary.	....
" 21	" ..	28975	Golden West Grocery. Calgary.	3 " ..	30	" ..	....
" 21	" ..	28976	W. Maitland, Calgary.	3 pks.	30	Unknown	... .
" 21	" ..	28977	Hallett & Longdens, Calgary.	3 " ..	30	Georgeson & Co., Ltd., Calgary.	.....
" 22	" ..	28978	People Co-operative Store, Calgary.	3 " ..	30	Unknown.....	.....
" 22	" ..	28979	J. T. Macdonald, Calgary.	3 tins.	25	Dalton Bros., Toronto	... .
" 22	" ..	28980	Speer Bros., Calgary	3 " ..	30	Red Feather Co., Hamilton.	....
" 22	" ..	28981	Watson's Grocery, Calgary.	¾ lb ..	30	Great West Spice Mills, Winnipeg.	....
" 22	" ..	28982	W. Verrier, Calgary.	3 pks.	30	Campbell, Wilson & Horne, Ltd., Calgary	....
" 22	" ..	28983	McLellan & Hawkes, Calgary.	3 tins.	30	W. V. Moore, Ltd., Calgary.	....
						DISTRICT OF VANCOUVER—	
Mar. 23	Ground Ginger..	37581	Granville Grocery, Vancouver.	3 tins.	30	E. R. Durke & Co., U.S.	.....
" 24	" ..	37582	R. Schilling, Vancouver.	3 " ..	30	Empress Mfg. Co., Vancouver.	Full strength...
" 24	" ..	37583	Mrs. C. H. Scott, Vancouver.	¾ lb ..	30	Unknown	....
" 24	" ..	37584	S. F. McCready, Vancouver.	3 tins.	30	Braid & Co., Vancouver.	Guaranteed absolutely pure.
" 24	" ..	37585	C. Groth, Vancouver	3 " ..	38	Oriental Mills, Vancouver.	Full strength...
" 24	" ..	37586	J. McArthur, Vancouver.	¾ lb ..	30	Unknown.....	....
" 24	" ..	37587	J. Donald & Co., Vancouver.	3 tins.	30	Kelly, Douglas & Co., Vancouver.	"Columbia" ...
" 24	" ..	37588	R. Acriman, Vancouver.	¾ lb ..	30	W. H. Malkin, Vancouver.	....
" 29	" ..	37634	Adams & Dean, New Westminster.	3 tins.	25	S. Leiser & Co., Victoria.	Guaranteed free from adulterations.
" 29	" ..	37635	Gunderson & Anne, New Westminster.	¾ lb .	30	Empress Mfg. Co., Vancouver.	....
						DISTRICT OF VICTORIA—	
April 27	Ground Ginger..	39316	Windsor Grocery Co., Victoria, B. C.	3 pks.	30	Pioneer Coffee & Spice Mills, Victoria.	Empire..... .
" 27	" ..	39317	Saunders Grocery Co., Ltd., Victoria, B.C.	3 " ..	30	R. P. Rithet & Co., Victoria.	St. James .... .
" 28	" ..	39318	Copas & Young, Victoria, B.C.	¾ lb ..	30	Victoria Coffee and Spice Mills, Victoria	....
" 28	" ..	39319	W. Speed, Victoria, B.C.	3 pks.	30	Blue Ribbon Mfg. Co., Winnipeg.	Blue Ribbon ....

SESSIONAL PAPER No. 14

GROUND GINGER.

Ash.			Results of Analysis.				Number of Sample.	Remarks and Opinion of the Chief Analyst.
Total.	Water Soluble.	Ratio.	Moisture.	Cold Water Extractive. Normal	Cold Water Extractive. Calculated to Dry Ginger	Microscope.		
R. W. FLETCHER, INSPECTOR.								
p.c.	p.c.	p.c.	p.c.	p.c.	p.c.			
3·53	2·43	·69	9·84	16·90	18·75	Genuine	28974	
3·45	2·42	·70	9·75	16·75	18·56	"	28975	
4·66	2·43	·52	9·42	13·80	15·23	"	28976	
5·64	2·78	·49	9·92	12·81	14·22	"	28977	
2·00	1·42	·71	9·68	10·08	11·16	Maize starch, 25 p.c.	28978	Ash low. Adulterated.
2·18	0·98	·45	10·71	12·43	13·92	Maize and wheat starch, 25 p.c.	28979	" "
4·97	2·74	·55	9·31	15·18	16·74	Genuine	28980	
5·32	2·52	·47	9·95	12·46	13·84	"	28981	
3·28	1·80	·55	9·58	14·61	16·16	"	28982	
2·60	1·31	·50	11·51	11·04	12·47	Maize and wheat starch, 15 p.c.	28983	Ash low. Adulterated.
J. F. POWER, INSPECTOR.								
5·12	2·46	·48	10·30	13·08	14·58	Genuine	37581	
4·46	2·06	·46	10·98	14·44	16·22	"	37582	
4·92	2·07	·42	9·23	15·36	16·92	"	37583	
5·42	2·18	·40	11·68	15·83	17·92	"	37584	
7·72	2·62	·34	10·80	14·07	15·77	"	37585	CaO=2·76. Ash insol. in HCl. =0·35. Ash abnormal ; high
4·52	1·89	·42	9·65	13·36	14·97	"	37586	
4·65	1·98	·43	11·55	14·37	16·25	"	37587	
5·62	2·16	·39	9·60	13·62	15·07	"	37588	
5·61	2·46	·44	10·80	10·94	12·26	"	37634	Low extractive. Doubtful.
5·10	2·02	·39	9·20	14·40	15·86	"	37635	
D. O'SULLIVAN, INSPECTOR.								
4·29	2·39	·56	11·80	11·00	12·47	Genuine	39316	Extractive low. Doubtful.
5·74	1·99	·35	11·05	13·73	15·44	"	39317	Ash abnormal.
5·13	2·52	·49	10·30	10·98	12·24	"	39318	Extractive low. Doubtful.
3·27	2·36	·72	10·24	16·87	18·80	"	39319	

BULLETIN No. 184—

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).
							DISTRICT OF VICTORIA—
1909.							
April 28	Ground Ginger..	39320	Fred Carne, Victoria, B.C.	3 pks.	30	E. R. Durkee & Co., New York, U.S.A.	Gauntlet.....
" 28	" ..	39321	Jalland Bros., Victoria, B.C.	3 " ..	30	W. A. Jameson Coffee Co., Victoria.	Victoria.....
" 28	" ..	39322	Wm. B. Hall, Victoria, B.C.	3 " ..	30	A. Shilling & Co., San Francisco, Cal.	Shilling's Best..
" 28	" ..	39323	The West End Grocery Co., Ltd., Victoria, B.C.	3 bots.	75	Crosse & Blackwell, London, Eng.	....
" 29	" ..	39324	W.A.Jameson Coffee Co., Victoria, B.C.	¾ lb ..	25	F. F. Dalley Co., Hamilton, Ont.	....
" 29	" ..	39325	E. G. Bailey, Victoria. B.C.	3 pks.	30	Empress Mfg. Co., Vancouver, B.C.	Empress.....

NOTE.—The word 'Genuine,' under Microscopic Examination, has reference only to the microscopic characteristics. It does not mean that the sample is genuine, except so far as botanical structure is concerned. This would not be materially affected by extraction of the article with cold water.

The percentage of foreign starch, &c., as stated under Microscopic Examination, must be regarded as approximate only. It is estimated by comparing microscopic fields with similar fields of mixtures containing known amounts of foreign material.

SESSIONAL PAPER No. 14

GROUND GINGER.

Ash.			Results of Analysis.					Number of Sample.	Remarks and Opinion of the Chief Analyst.
Total.	Water Soluble.	Ratio.	Moisture.	Cold Water Extractive. Normal	Cold Water Extractive. Calculated to Dry Ginger	Microscope.			
D. O'SULLIVAN, INSPECTOR—*Concluded.*									
p.c.	p.c.	p.c.	p.c.	p.c.	p.c.				
5·40	2·62	·49	10·73	13·15	14·73	Genuine		39320	
5·78	2·00	·35	11·58	14·55	16·46	"		39321	Ash abnormal.
3·47	2·56	·72	12·08	16·84	19·15	"		39322	
3·24	2·26	·68	10·45	17·87	19·96	"		39323	
3·93	2·25	·59	9·85	13·44	14·91	"		39324	
4·28	2·21	·52	12·96	13·92	16·00	"		39325	

APPENDIX F.

BULLETIN No. 185—INFANT'S AND INVALID'S FOODS.

Ottawa, July 24, 1909.

W. J. Gerald, Esq,
Deputy Minister of Inland Revenue.

Sir:—I have the honour to transmit you herewith a report upon 77 samples of so-called Infant's and Invalid's Foods. The present inspection has regard to a collection ordered in April last, and represents twenty-three (23) different brands. It does not claim to cover all the kinds of Infant's and Invalid's Foods which are found upon the Canadian Market; but it probably indicates pretty fairly their general character.

The only previous collection of this kind was made in April, 1898. (*See* Bull. 59). At that time, one hundred and three samples (103) representing twenty-two (22) brands, were reported. Ten of these brands are represented in the present collection; and analysis shows most of these foods to be essentially of the same character as they were found eleven years ago. This is shown in the following table:—

Table I.—COMPARISON OF MEAN RESULTS FOR 1898 AND 1909.

Name of Brand.	Moisture.	Fat.	Loss to Alcohol.	Loss to Water.	Sum of Losses.	Proteids.	Ash.	Starch, &c., Difference.	No. of Samples Examined.
Cardinal Food, 1898	9·61	0·64	4·91	2·91	7·82	10·38	1·48	67·35	5
" 1909	7·26	0·42	5·64	3·33	8·94	10·44	0·98	71·91	3
Christies Food, 1898	4·22	3·49	27·89	6·00	33·89	7·19	1·05	49·31	5
" 1909	3·70	3·05	28·40	7·25	35·65	6·50	1·09	50·10	1
English Milk Food, 1898	5·38	0·57	.....	.....	29·59	10·43	1·06	53·62	2
" " 1909	5·60	0·83	19·90	9·85	29·78	8·41	0·77	54·08	2
Wemalta, 1898	8·65	0·85	5·90	3·77	9·67	12·18	0·88	63·62	2
" 1909	9·00	1·27	8·55	20·58	29·13	11·75	0·84	48·01	3
Horlick's Malted Milk, 1898	2·55	1·41	.....	.....	63·87	14·00	3·57	15·68	9
" " 1909	3·13	7·92	50·59	18·28	68·87	14·90	3·55	1·63	8
Lactated Food, 1898	5·77	0·48	28·24	4·27	32·90	10·01	2·57	47·72	12
" 1909	6·87	0·38	24·18	6·26	30·44	9·54	1·14	51·75	8
Mellins' Food, 1898	4·72	0·30	.....	.....	82·06	10·10	3·50	.....	3
" 1909	4·06	0·74	69·41	10·46	79·92	10·97	3·28	1·03	4
Ridges' Food, 1898	8·12	0·48	0·34	4·67	5·02	13·83	0·53	72·01	9
" 1909	8·11	1·91	Trace...	4·36	4·36	11·77	0·51	73·34	4
Nestle's Food, 1898	2·18	4·45	39·54	4·30	43·84	10·72	1·60	35·34	9
" 1909	1·67	4·69	49·83	13·03	62·85	12·09	1·51	17·19	8
Robinson's Barley, 1898	9·41	0·41	0·65	2·26	2·91	7·46	0·94	78·66	7
" 1909	8·46	1·26	2·69	4·09	6·78	7·25	0·61	75·64	6

Exceptions occur in the cases of Wemalta, Horlick's Malted Milk and Nestle's Infant's Foods.

Wemalta. The present inspection shows a greatly increased percentage of matters soluble in alcohol and in water; in other words, in sugars and soluble starch. This is a feature which, for invalid's use, gives the food an increased value.

Horlick's Malted Milk. The much higher value shown for fat in this report, is doubtless due to improved methods of analysis, rather than to any change in the character of the food. The influence of malt sugar in hindering the extraction of milk fat, was unknown to me at the time of performing the work recorded in Bulletin 59. Dr. R. A Chittenden, professor of Physiological Chemistry in Yale College, and many other chemists, have underestimated the fat in this class of foods, for the same reason. Direct extraction with dry ether for eight hours, yields less than 2 per cent of fat; while previous dilution to the consistency of milk, permits of the separation of nearly 8 per cent fat.

Nestle's Milk Food shows a much higher percentage of matters soluble in alcohol and water than in 1898. This is an improvement probably due to some changes in process of manufacture.

As pointed out in Bulletin 59, the foods now reported fall naturally into two classes distinguished by the amount of unchanged starch present.

If an arbitrary line between these groups be drawn at about 75 per cent of unchanged starch, the following may be described as Farinaceous Foods:

Concentrated Cardinal Food,
Ridges' Food,
Robinson's Patent Barley,
Triangle Food,
Triticumina.

On the other hand, the following foods contain little or no unchanged starch:—

Allenburys' Milk Food No. 1,
" " " 2,
Horlick's Malted Milk,
Lacto-Globulin,
Mellins' Food,
Wampole's Milk Food.

The remaining foods contain varying amounts of starch from about 7 per cent (Wyeth's Prepared Food) to 50 or 60 per cent.

Most of those foods which are poor in fat are directed to be prepared for use by addition of milk.

It must be said that some of those directed to be prepared with water only, would seem to provide a starvation diet for infants, so far as the fat is concerned; but questions of this kind must be left to be decided by physicians.

I beg to recommend the publication of this report as Bulletin No. 185.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

TABLE II.—INFANT'S AND

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Value.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
					$ c.	
DISTRICT OF NOVA SCOTIA—						
1909.						
April 15	Infants and Invalids Foods	33937	Jas. D. Walsh, Halifax, N.S.	3 pks.	45	Mathew Robinson, London, Eng.
" 16	" " ..	33938	Brown Bros. & Co., Halifax, N.S.	3 " .	75	Wells, Richardson & Co., Burlington, Vt.
" 16	" " ..	33939	Irwin & Sons, Halifax, N.S.	3 " .	75	Chas. Martin, Montreal.
" 16	" " ..	33940	J. St. Clair, Coombes & Co., Halifax, N.S.	3 " .	1 05	Smith, Klein & French, Philadelphia, U.S.
" 17	" " ..	33941	Nat. Drug and Chem. Co., Halifax, N.S.	3 " .	1 50	Horlicks Malted Milk Co., Racine, Wis., U.S.
DISTRICT OF PRINCE EDWARD ISLAND—						
April 6	Infants and Invalids Foods	31483	G. E. Hughes, Charlottetown.	3 pks.	75	Chas. Martin, Montreal.
" 7	" " ..	31484	A. W. P. Gourlie, Summerside.	3 " .	75	Wells, Richardson & Co., Burlington, Vt.
" 7	" " ..	31485	Edgar Keir, Kensington	3 " .	1 50	G. Mellin, Boston, Mass.
" 7	" " ..	31486	John Knight, Georgetown.	3 " .	1 50	The Lacto-Globulin Co., Ltd., Montreal.
" 7	" " ..	31487	Johnson & Johnson, Charlottetown.	3 " .	1 05	Ridges Patent Food Co., Ltd., Palmer, Mass.
DISTRICT OF NEW BRUNSWICK—						
Mar. 23	Infants and Invalids Foods	29917	The Nat. Drug and Chem. Co., Ltd., St. Johns, N.B.	3 pks.	60	Keen Robinson Co., Ltd., London, Eng.
" 26	" " ..	29918	The Can. Drug Co., Ltd., St. Johns, N.B.	3 " .	1 50	Allen & Hanbury, Ltd., London, Eng.
April 6	" " ..	29919	A. J. Ryan, Fredericton, N.B.	3 " .	1 50	Henry K. Wampole & Co., Perth, Ont.
" 14	" " ..	29920	The Acadia Drug Co., Moncton, N.B.	3 " .	1 20	Woodrich & Co., Palmer, Mass.
" 19	" " ..	29921	Thomas Wran, Campbellton, N.B.	3 " .	1 00	Wells, Richardson & Co., Montreal.
DISTRICT OF QUEBEC—						
April 19	Infants and Invalids Foods	36893	W. Brunnette & Cie, Quebec.	3 pks.	50	Wells-Richardson, Montreal.
" 19	" " ..	36894	L. E. Martel, Quebec...	1½ lb .	1 35	W. Brunnette & Cie, Quebec.
" 19	" " ..	36895	D. R. Gagnon, Quebec..	3 boxes	75	Ed. Morin & Cie, Quebec
" 19	" " ..	36896	V. Giroux, Quebec	3 " .	1 50	Nat. Drug Co., Montreal
" 20	" " ..	36897	Laroche & Co., Quebec..	3 " .	1 05	Lyman Sons, Montreal..

SESSIONAL PAPER No. 14

INVALID'S FOOD.

Inspector's Report. (Is not an expression of Opinion).	Results of Analysis.								Number of Sample.
	Moisture.	Fat, by Petrole Ether.	Loss to Alcohol.	Loss to Water.	Sum of Losses to Alcohol and water.	Proteids, N x 6·25.	Ash.	Starch, &c., by Difference.	
R. J. WAUGH, INSPECTOR.									
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
"Robinson's Barley"...	8·95	1·25	2·90	4·15	7·05	7·69	0·74	.....	33937
"Lactated Food".....	6·95	0·42	24·65	5·10	29·65	9·56	1·04	51·38	33938
"Cardinal Food".....	8·18	0·35	5·50	2·85	8·35	10·50	0·86	71·76	33939
"Eskay's" Albumenized Food.	1·70	4·95	51·30	7·35	58·65	7·25	0·98	26·47	33940
Horlick's Malted Milk...	3·45	8·45	49·00	18·30	67·30	14·88	1·00	1·92	33941
THEO. MOORE, INSPECTOR.									
"Cardinal Food".....	7·12	0·57	5·22	3·87	9·09	10·31	0·98	71·91	31483
"Lactated".....	6·45	0·50	23·77	6·40	30·17	8·81	1·10	53·00	31484
"Mellins".....	4·00	0·60	64·75	15·30	80·05	11·56	3·56	0·23	31485
"Lacto-Globulin".....	9·85	6·65	5·30	6·35	11·65	71·44	8·36	.....	31486
"Ridges"..... ...	8·80	2·45	... .	4·55	.....	14·38	0·54	... ..	31487
J. C. FERGUSON, INSPECTOR.									
Robinson's Patent Barley	8·75	1·25	2·25	4·35	6·60	6·81	0·60	.....	29917
Allenbury's No. 3.....	2·30	17·75	54·60	8·95	63·55	10·00	3·40	....	29918
Wampole's Milk Food...	3·75	7·40	55·80	17·40	73·20	11·62	2·46	.....	29919
Ridges Patent Food.....	7·65	1·40	.....	4·75	.....	11·31	0·56	.....	29920
Lactated Food.....	6·80	0·45	22·37	7·05	29·42	9·13	1·20	53·00	29921
E. BELAND, INSPECTOR.									
Lactated...	6·90	0·30	24·07	7·05	31·12	9·81	1·46	50·41	36893
Allenburys.....	3·30	17·75	54·45	8·60	63·05	10·00	3·56	.....	36894
Robinson's Barley.. . .	8·25	1·15	2·65	3·75	6·40	7·44	0·54	.....	36895
Allenburys.....	3·00	16·70	53·95	9·90	63·85	10·00	3·86	. .. ...	36896
Ridges Food.... . . .	8·25	1·45	Trace...	3·65	3·65	10·94	0·40	.....	36897

TABLE II.—INFANT'S AND

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Value.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF ST. HYACINTHE—			
1909.					$ c.	
April 19	Infants and Invalids Foods	1028	D. Hebert, Drummondville.	3 tins.	1 50	Unknown.....
" 21	" " ..	1029	Dr. Guy, St. Jean	3 " .	1 50	Allen & Hanbury, London, Eng.
" 26	" " ..	1030	P. H. Hebert, Village St., Hilaire.	2 " .	30	Lyman's, Ltd., Montreal
May 6	" " ..	1031	F. D. Hewitt, Sherbrooke	3 " .	75	Nat. Drug, Montreal....
" 25	" " ..	1032	Raymond Frères, St. Hyacinthe.	3 " .	75	Christie, Brown & Co., Toronto.
			DISTRICT OF MONTREAL—			
Mar. 27	Infants and Invalids Foods	40026	J. M. Aird, Montreal...	3 tins.	75	Vendor ....
" 27	" " ..	40027	J. J. Weinfeld, Montreal	3 " .	75	Weir Specialty Co., Toronto.
" 27	" " ..	40028	" " ..	3 " .	1 50	Allen & Hanbury, Ltd., London, Eng.
" 27	" " ..	40029	Lyman's, Ltd., Montreal	3 " .	1 16	Henri Nestle, Vevey, Switzerland.
" 27	" " ..	40030	" " ..	3 " .	1 25	Horlick's Malted Milk Co.
			DISTRICT OF OTTAWA			
Mar. 19	Infants and Invalids Foods	22936	Dr. Wallace, Buckingham.	3 pks.	1 50	Lyman Sons & Co., Montreal.
" 24	" " ..	22937	Jos. P. Valiquette, Ottawa	3 tins.	1 20	Unknown. .....
" 26	" " ..	22938	E. D. Story, Ottawa....	3 " .	1 50	" ..... .
" 26	" " ..	22939	E. R. DesRosiers, Ottawa	3 " .	1 50	" . .....
" 26	" " ..	22940	Estate W. H. Roger, Ottawa.	3 bots	1 50	Wampole's, Perth, Ont..
			DISTRICT OF KINGSTON—			
Mar. 18	Infants and Invalids Foods	39466	W. W. Gibson, Kingston	3 tins.	1 35	Nat. Drug Co.. . .....
" 23	" " ..	39467	F. C. Clark, Belleville ..	3 " .	1 50	Allen & Hanbury's, London, Eng.
" 23	" " ..	39468	R. Templeton, Belleville	3 " .	1 50	Horlick's Malted Milk ..
" 22	" " ..	39469	C. J. Webster, Cobourg.	3 " .	1 05	Weir Specialty Co., Toronto.
" 23	" " ..	39470	J. D. Tully, Peterboro..	3 " .	1 50	Horlick's Malted Milk ..

SESSIONAL PAPER No. 14

INVALID'S FOOD.

Inspector's Report. (Is not an expression of Opinion).	Results of Analysis.								Number of Sample.
	Moisture.	Fat, by Petrolic Ether.	Loss to Alcohol.	Loss to Water.	Sum of Losses to Alcohol and Water.	Proteids, N x 6·25.	Ash.	Starch, &c., by Difference.	
J. C. ROULEAU, INSPECTOR.									
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
Nestle's	1·60	4·82	50·55	14·30	64·85	12·50	1·40	.....	1028
Allenburys	3·10	17·95	54·65	8·35	63·00	10·12	3·50	.....	1029
Prepared groats	5·50	7·00	3·70	4·70	8·40	13·94	1·06	64·10	1030
Cardinal food	6·50	0·35	6·20	3·27	9·47	10·50	1·12	72·06	1031
Christies	3·70	3·05	28·40	7·25	35·65	6·50	1·00	50·10	1032
J. J. COSTIGAN, INSPECTOR.									
"Triticumina"	5·62	1·58	1·20	5·10	6·30	12·88	0·50	73·12	40026
"Wemalta"	9·30	1·20	9·25	19·55	28·80	10·69	1·06	.....	40027
"Allenbury's No. 1	2·70	16·75	55·60	8·65	64·25	10·00	3·60	.....	40028
"Nestle's"	1·50	4·25	51·23	10·57	61·80	12·00	1·42	.....	40029
"Horlick's Malted Milk"	3·20	8·35	50·75	17·30	68·05	15·31	3·90	1·19	40030
J. A. RICKEY, INSPECTOR.									
"Wyeth's prepared food"	3·00	1·30	46·00	22·30	68·30	14·69	3·50	7·21	22936
"Nestle's" Food	1·68	4·47	51·33	11·78	63·10	11·19	1·40	.....	22937
"Horlick's Malted Milk"	3·45	7·32	50·90	17·65	68·55	14·94	3·70	.....	22938
Lacto-Globulin; a pure albumen.	9·05	0·85	7·97	4·92	12·89	72·62	8·20	.....	22939
Wampole's Milk Food	3·35	7·10	55·60	15·70	71·30	14·18	2·64	.....	22940
JAS. HOGAN, INSPECTOR.									
Nestle's	0·76	4·34	51·02	12·88	63·90	12·06	.....	.....	39466
Allenburys	3·15	15·55	53·40	11·65	65·05	8·94	3·54	.....	39467
Horlicks	3·35	7·60	52·05	18·25	70·30	14·96	3·40	.....	39468
Wemalta	8·85	1·25	7·30	21·60	28·90	12·25	0·68	.....	39469
Horlicks	2·90	8·15	49·90	20·10	70·00	14·69	3·80	.....	39470

TABLE II—INFANT'S AND

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Value.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.
					$ c.	
DISTRICT OF TORONTO—						
1909.						
April 7	Infants and Invalids Foods	36196	B. Griffin, Hamilton.....	3 pks.	75	Triangle Food Co., Hamilton.
" 10	" " ..	36197	Blaicher & Reche, Hamilton.	" .	75	The Ontario Chemists M'f'g. Co., Hamilton..
" 13	" " ..	36198	Geo. Monkman, Barrie..	" .	120	Lyman Bros. Co., Ltd., Toronto.
" 14	" " ..	36199	E. B. Schell, Alliston...	" .	100	Allen & Hanbury Ltd., London, Eng.
" 20	" " ..	36260	Weir Specialty Co., Ltd., Toronto.	" .	84	Vendors..... ..... .
DISTRICT OF LONDON—						
Mar. 25	Infants and Invalids Foods	30591	Alex. Stewart, Guelph..	3 pks.	90	Lyman Bros., Toronto ..
" 25	" " ..	30593	Walter Beattie, Guelph	" .	75	Winer & Co., Hamilton.
" 26	" " ..	30595	O. H. Meyers, Stratford.	" .	75	C. S. Nasmyth, Stratford.
" 29	" " ..	30604	Jno.A. Roberts, Seaforth	" .	100	Unknown ....
" 29	" " ..	30607	W. S. R. Holmes, Clinton.	" .	100	Drug Trading Co., Toronto.
" 31	" " ..	30608	S. E. Hick, Goderich....	3 cans	75	Unknown... ....
" 31	" " ..	30609	Jas. Wilson, Goderich ..	2 " .	100	J. Winer & Co., Hamilton.
DISTRICT OF WINDSOR—						
April 8	Infants and Invalids Foods	34784	W. T. Strong, London, Ont.	3 tins.	1 50	Neaves Food Co., England.
" 8	" " ..	34785	Anderson & Nelles, London, Ont.	" .	1 50	Lacto Globulin, Montreal
" 14	" " ..	34799	E. C. Harvey, St. Thomas.	3 pks.	1 50	Horlicks Malted Milk Co. Racine, Wis.
" 14	" " ..	35901	T. H. Duncombe, St. Thomas.	" .	1 50	Allenbury Milk Food Co.
" 15	" " ..	35911	W. T. Rapley & Co., Strathroy.	" .	75	Wells Richardson Co., Montreal.
DISTRICT OF MANITOBA—						
April 14	Infants and Invalids Foods	35866	The Lincoln Park Drug Hall, Winnipeg.	3 pks.	1 35	Allen & Hanbury, Ltd., London.
" 14	" " ..	35867	Gillespie & Campbell, Winnipeg.	" .	90	Allen & Hanbury, Ltd., London.
" 14	" " ..	35868	Thornton Andrews, Winnipeg.	" .	1 50	The Dom. Drug Co., Hamilton.
" 14	" " ..	35869	Harrison's Drug Store, Winnipeg.	" .	1 15	Henri Nestle, Vevey, Switzerland.
" 14	" " ..	35870	E. A. Mitchell & Co., Winnipeg.	" .	1 50	Wampole & Co., Perth..

SESSIONAL PAPER No. 14

INVALID'S FOOD.

Inspector's Report. (Is not an expression of Opinion.)	Results of Analysis.								Number of Sample.
	Moisture.	Fat, by Petrolic Ether.	Loss to Alcohol.	Loss to Water.	Sum of Losses to Alcohol and Water.	Proteids, N x 6·25.	Ash.	Starch, &c., by Difference.	
H. J. DAGER, INSPECTOR.									
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.
Triangle Food	7·35	1·70	1·20	2·55	3·75	12·25	0·70	74·25	36196
English Milk Food, Malted	5·75	0·70	20·40	9·90	30·30	8·38	0·92	53 95	36197
Ridges Food	7·75	2·35	Trace ..	4·50	4·50	10·44	0·54	.....	36198
Allenbury's No. 3.	4·00	1·25	8·85	15·10	23·95	10·94	0·60	.....	36199
Wemalta	8·85	1·35	9·10	20·60	29·70	12·31	0·78	.....	36260
T. KIDD, INSPECTOR.									
Allenburys	4·66	1·26	9·64	10·20	19·84	10·50	.....	.....	30591
Lactated	6·70	0·40	27·97	4·20	32·17	11·06	1·40	49·39	30593
Mellins	4·70	0·85	73·75	5·00	78·75	10·44	2 74	2·52	30595
Nestle's	2·90	5·35	45·45	13·60	59 06	12·50	1·74	.....	30604
Robinsons Barley	8 05	1·40	2·55	4·20	6·75	7·63	0·62	.....	30607
English Milk Food	5·46	0·95	19·45	9·80	29·25	8·50	0,62	55·22	30608
Horlicks	3·55	7·70	47·80	19·55	67·35	14·88	4·00	.....	30609
JNO. TALBOT, INSPECTOR.									
Neaves Food	4·00	0·75	16·75	8·40	25·15	12·06	0·46	57·58	34784
Lacto-Globulin	9·45	0·97	8·25	5·65	13·80	71·06	8·00	.....	34785
Horlicks	3·35	7·00	53·55	15·85	69·40	14·19	2·70	.....	34799
Allenburys	3·25	17·35	55·65	8·00	63·65	10·00	3·94	.....	35901
Lactated	6·95	0·45	22·15	6·57	28·72	9·50	1·04	53 34	35911
A. C. LARIVIÈRE, INSPECTOR.									
Allenbury's No. 2	3·40	15·80	53·80	12 65	66·45	9·44	3·80	.....	35866
Allenbury's No. 3	3·90	1 74	9 40	13·02	22·42	10·88	.....	.....	35867
Babys Own	6 55	1·05	7·65	15·15	22·80	9·63	0·58	59·39	35868
Nestle's	1·12	4·40	50·88	12·30	63·18	13·13	1·56	.....	35869
Wampoles	2.53	7·20	57·15	16·75	73·90	12·43	2·44	.....	35870

TABLE II.—INFANT'S AND

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Value.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
					$ c.	
DISTRICT OF CALGARY—						
1909.						
April 16	Infants and Invalids Foods	28984	McCutcheon & McGill, Calgary.	3 tins.	1 50	Allan & Hanbury, Ltd., London, Eng.
" 16	" " ..	28985	C. A. Wallace, Calgary.	3 " .	1 50	Lacto-Globulin Co., Ltd., Montreal.
" 16	" " ..	28986	W. MacLean " ..	3 " .	1 05	Keen, Robinson & Co. Ltd., London, Eng.
" 16	" " ..	28987	Curry & Cope " ..	3 " .	1 50	Bengers Food Ltd., Manchester, Eng.
" 16	" " ..	28988	Oliver Bros. " ..	3 " .	1 05	Smith, Kline & French Co., Philadelphia, U.S.
DISTRICT OF VANCOUVER—						
Mar. 23	Infants and Invalids Foods	37576	J. W. Morrow, Vancouver.	3 tins.	1 50	Henderson Bros., Vancouver
" 23	" " ..	37577	Woods Pharmacy, Vancouver.	3 " .	1 50	Horlick Malted Milk Co., Racine, U.S.
" 23	" " ..	37578	McDowell & Burns, Vancouver.	3 bots.	3 00	W. K. Wampole, Philadelphia, U.S.
" 23	" " ..	37579	Wm. Harrison Drug Co., Vancouver.	3 " .	1 50	Mellins Food Co., Ltd., London, Eng.
" 23	" " ..	37580	Red River Drug Store, Vancouver.	3 pkgs	1 50	Wells, Richardson & Co., Burlington, Vt.
DISTRICT OF VICTORIA—						
May 11	Infants and Invalids Foods	39326	F. J. Williams, Victoria, B.C.	3 pkgs	1 50	Leeming, Miles & Co., Montreal.
" 11	" " ..	39327	Dean & Hiscocks, Victoria, B.C.	3 " .	75	Henderson Bros., Victoria, B.C.
" 11	" " ..	39328	Wm. Jackson & Co., Victoria, B.C.	3 " .	1 50	" " ..
" 12	" " ..	39329	D. E. Campbell, Victoria, B.C.	3 " .	1 50	Mellins Food Co., Boston, Mass.
" 11	" " ..	39330	John Cochrane, Victoria, B.C.	3 " .	1 50	Allen, Hanbury, Ltd. London, Eng.

SESSIONAL PAPER No. 14

INVALID'S FOOD.

Inspector's Report. (Is not an expression of Opinion).	Results of Analysis.								Number of Sample.
	Moisture.	Fat, by Petrolic Ether.	Loss to Alcohol.	Loss to Water.	Sum of Losses to Alcohol and Water.	Proteids, N x 6·25.	Ash.	Starch, &c., by Difference.	
R. W. FLETCHER, INSPECTOR.									
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
Allenburys	3·20	15·45	55·90	10·30	66·20	10·00	3·80	.....	28984
Lacto-Globulin	9·27	0·70	6·10	5·95	12·05	74·62	8·22	.....	28985
Robinson's Barley	8·25	1·05	2·93	3·20	6·23	6·94	0·50	.....	28986
Bengers Food	6·60	1·30	6·40	27·05	33·45	11·19	0·90	46·56	28987
"Eskay's"	1·45	4·73	46·70	12·13	58·80	7·00	1·14	26·88	28988
J. F. POWER, INSPECTOR.									
Nestle's	1·44	4·46	47·38	15·48	62·86	11·56	1·80	.....	37576
Horlicks Malted Milk	1·80	8·80	50·80	19·20	70·00	15·31	2·90	.....	37577
Wampole's	2·40	7·45	55·70	19·30	75·00	11·81	2·68	.....	37578
Mellins	4·00	0·70	70·00	9·85	79·85	11·12	3·42	0·91	37579
Lactated	7·65	0·30	23·75	7·05	30·80	9·00	1·00	52·20	37580
D. O'SULLIVAN, INSPECTOR.									
Nestle's	2·40	5·40	50·80	13·20	64·00	11·81	1·24	.....	39326
Robinson's Barley	8·50	1·45	2·85	4·80	7·65	7·00	0·62	.....	39327
Lactated	6·60	0·30	24·77	6·70	31·47	9·44	0·88	51·31	39328
Mellins	3·55	0·80	69·15	11·70	81·05	10·75	3·40	0·45	39329
Allenbury's No. 1	2·65	16·75	54·65	9·80	64·45	10·12	3·86	.....	39330

Table III.

ALLENBURY'S MILK FOOD, No. 1.

Serial Number.	Departmental Number.	Moisture.	Fat, by Petrolic Ether.	Loss to Alcohol.	Loss to Water.	Sum of Losses to Alcohol and and Water.	Proteids — N. × 6·25.	Ash.	Starch, &c., by Difference.	Remarks.
1	29918	2·30	17·75	54·60	8·95	63·55	10·00	3·40	.....	Directions require water only to be added in preparing for use.
2	36894	3·30	17·75	54·45	8·60	63·05	10·00	3·56	.....	
3	36896	3·00	16·70	53·95	9·90	63·85	10·00	3·86	.....	
4	1029	3·10	17·95	54·65	8·35	63·00	10·12	3·50	.....	
5	40028	2·70	16·75	55·60	8·65	64·25	10·00	3·60	.....	
6	39330	2·65	16·75	54·65	9·80	64·45	10·12	3·86	.....	
7	35901	3·25	17·35	55·65	8·00	63·65	10·00	3·94	.....	
	Means..	2·90	17·28	54·79	8·89	63·68	10·03	3·68	2·43	

ALLENBURY'S MILK FOOD, No. 2.

8	39467	3·15	15·55	53·40	11·65	65·05	8·94	3·54	.....	Directions require water only to be added in preparing for use.
9	35866	3·40	15·80	53·80	12·65	66·45	9·44	3·80	.....	
10	28984	3·20	15·45	55·90	10·30	66·20	10·00	3·80	.....	
	Means..	3·25	15·60	54·36	11·53	65·90	9·46	3·71	1·98	

ALLENBURY'S MALTED FOOD, No. 3.

11	35867	3·90	1·74	9·40	13·02	22·42	10·88	.....	.....	Milk is used in preparing this food for use according to directions.
12	30591	4·66	1·26	9·61	10·20	19·81	10·50	.....	.....	
13	36199	4·00	1·25	8·85	15·10	23·95	10·94	0·60	.....	
	Means..	4·19	1·42	9·30	12·77	22·07	10·77	0·60	60·95	

BABY'S OWN FOOD.

14	35868	6·55	1·05	7·65	15·15	22·80	9·63	0·58	59·39	Directions require addition of varying amounts of milk.

BENGER'S FOOD.

15	28987	6·60	1·30	6·40	27·05	33·45	11·19	0·90	46·56	Is directed to be used along with milk, which supplies the fat required.

CONCENTRATED CARDINAL FOOD.

16	33039	8·18	0·35	5·50	2·85	8·35	10·50	0·86	71·76	
17	31483	7·12	0·57	5·22	3·87	9·09	10·31	0·98	71·91	
18	1031	6·50	0·35	6·20	3·27	9·47	10·50	1·12	72·06	
	Means..	7·26	0·42	5·64	3·33	8·94	10·44	0·98	71·91	

CHRISTIE'S INFANT'S FOOD.

19	1032	3·70	3·05	28·40	7·25	35·65	6·50	1·00	50·10	Is directed to be prepared with water only.

TABLE III.

ENGLISH MILK FOOD—MALTED.

Serial Number.	Departmental Number.	Moisture.	Fat by Petrolic Ether.	Loss to Alcohol.	Loss to Water.	Sum of losses to Alcohol and Water.	Proteids—N. × 6·25.	Ash.	Starch, &c., by Difference.	Remarks.
20	36197	5·75	0·70	20·40	9·90	30·30	8·38	0·92	53·95	Directed to be prepared with milk.
21	30608	5·46	0·95	19·45	9·80	29·25	8·50	0·62	55·22	
	Means..	5·60	0·83	19·90	9·85	29·78	8·44	0·77	54·08	

ESKAY'S ALBUMENIZED FOOD.

22	33940	1·70	4·95	51·30	7·35	58·65	7·25	0·98	26·47	Is directed to be used along with milk, to supply fat, &c.
23	23988	1·45	4·73	46·70	12·13	58·80	7·00	1·14	26·88	
	Means.	1·58	4·84	49·00	9·74	58·73	7·13	1·06	26·68	

HORLICK'S MALTED MILK.

24	33941	3·45	8·45	49·00	18·30	67·30	14·88	4·00	1·92	Prepared for use with water only; but cream may be added if desired, according to directions on the label.
25	40030	3·20	8·35	50·75	17·30	68·05	15·31	3·90	1·19	
26	22038	3·45	7·32	50·90	17·65	68·55	14·94	3·70	.....	
27	39468	3·35	7·60	52·05	18·25	70·30	14·96	3·40	.....	
28	39470	2·90	8·15	49·90	20·10	70·09	14·69	3·80	.....	
29	30609	3·55	7·70	47·80	19·55	67·35	14·88	4·00	.....	
30	34799	3·35	7·00	53·55	15·85	69·40	14·19	2·70	.....	
31	37577	1·80	8·80	50·80	19·20	70·00	15·31	2·90	.....	
	Means.	3·13	7·92	50·59	18·28	68·87	14·90	3·55	1·63	

LACTO-GLOBULIN.

32	31486	9·85	0·65	5·30	6·35	11·65	71·44	8·36	.....	Prepared for use with water only; but milk, &c., may be added.
33	22939	9·05	0·85	7·97	4·92	12·89	72·62	8·20	.....	
34	34785	9·45	0·97	8·25	5·65	13·80	71·06	8·00	.....	
35	28985	9·27	0·70	6·10	5·95	12·05	74·62	8·22	.....	
	Means.	9·40	0·79	6·90	5·72	12·59	72·44	8·19	.....	

NOTE.—The factor 6·25 used for converting nitrogen to proteids is an approximate factor only, and lead to notable error in the case of this food, which contains about 70 per cent of proteid material.

LACTATED FOOD.

36	33938	6·95	0·42	24·65	5·10	29·65	9·56	1·04	51·38
37	31484	6·45	0·50	23·77	6·40	30·17	8·81	1·10	53·00
38	29921	6·80	0·45	22·37	7·05	29·42	9·13	1·20	53·00
39	36893	6·90	0·30	24·07	7·05	31·12	9·81	1·46	50·41
40	30593	6·70	0·40	27·97	4·20	32·17	11·06	1·40	49·39
41	35911	6·95	0·45	22·15	6·57	28·72	9·50	1·04	53·34
42	37580	7·65	0·30	23·75	7·05	30·80	9·00	1·00	52·20
43	39328	6·60	0·30	24·77	6·70	31·47	9·44	0·88	51·31
	Means.	6·87	0·38	24·18	6·26	30·44	9·54	1·14	51·75

Table III.

MELLIN'S FOOD.

Serial Number.	Departmental Number.	Moisture.	Fat by Petrolic Ether.	Loss to Alcohol.	Loss to Water.	Sum of Losses to Alcohol and Water.	Proteids N x 6·25.	Ash.	Starch, &c., by Difference.	Remarks.
44	31485	4·00	0·60	64·75	15·30	80·05	11·56	3·56	0·23	Sample 30595 had been wrapped in paper, and was not in good condition when analysed.
45	30595	4·70	0·85	73·75	5·00	78·75	10·44	2·74	2·52	
46	37579	4·00	0·70	70·00	9·85	79·85	11·12	3·42	0·91	
47	39329	3·55	0·80	69·15	11·70	81·05	10·75	3·40	0·45	This food is directed to be prepared with milk, to supply fat, &c.
	Means.	4·06	0·74	69·41	10·46	79·92	10·97	3·28	1·03	

NEAVE'S FOOD.

48	34784	4·00	0·75	16·75	8·40	25·15	12·06	0·46	57·58	Directed to be used with milk.

NESTLE'S FOOD.

49	1028	1·60	4·82	50·55	14·30	64·85	12·50	1·40	.....	Directed to be used without milk.
50	40029	1·50	4·25	51·23	10·57	61·80	12·00	1·42	.....	
51	22937	1·68	4·47	51·33	11·78	63·10	11·19	1·40	.....	
52	39466	0·76	4·34	51·02	12·88	63·90	12·06	.....	.....	
53	30604	2·90	5·35	45·45	13·60	59·06	12·50	1·74	.....	
54	35869	1·12	4·40	50·88	12·30	63·18	13·13	1·56	.....	
55	37576	1·44	4·46	47·38	15·48	62·86	11·56	1·80	.....	
56	39326	2·40	5·40	50·80	13·20	64·00	11·81	1·24	.....	
	Means.	1·67	4·69	49·83	13·03	62·85	12·09	1·51	17·19	

PREPARED GROATS.

57	1030	5·50	7·00	3·70	4·70	8·40	13·94	1·06	64·10	For making a gruel.

RIDGE'S FOOD.

58	31487	8·80	2·45	.....	4·55	.....	14·38	0·54	.....	Is directed to be prepared for use with milk.
59	29920	7·65	1·40	.....	4·75	.....	11·31	0·56	.....	
60	36897	8·25	1·45	trace. ..	3·65	3·65	10·94	0·40	.....	
61	35198	7·75	2·35	" ...	4·50	4·50	10·44	0·54	.....	
	Means.	8·11	1·91	trace ...	4·36	4·36	11·77	0·51	73·74	

ROBINSON'S PATENT BARLEY.

62	33937	8·95	1·25	2·90	4·15	7·05	7·69	0·74	.....	Is directed to be prepared with milk, which supplies the fat.
63	29017	8·75	1·25	2·25	4·35	6·60	6·81	0·60	.....	
64	36895	8·25	1·15	2·65	3·75	6·40	7·44	0·51	.....	
65	30607	8·05	1·40	2·55	4·20	6·75	7·63	0·62	.....	
66	28986	8·25	1·05	2·93	3·30	6·23	6·94	0·50	.....	
67	39327	8·50	1·45	2·85	4·80	7·65	7·00	0·62	.....	
	Means.	8·46	1·26	2·69	4·09	6·78	7·25	0·61	75·64	

TABLE III.

TRIANGLE FOOD.

Serial Number.	Departmental Number.	Moisture.	Fat by Petrolic Ether.	Loss to Alcohol.	Loss to Water.	Sum of losses to Alcohol and Water.	Proteids—N. × 6·25.	Ash.	Starch, &c., by Difference.	Remarks.
68	36196	7·35	1·70	1·20	2·55	3·75	12·25	0·70	74·25	Directed to be prepared with milk.

TRITICUMINA.

69	40026	5·62	1·58	1·20	5·10	6·30	12·88	0·50	73·12	Directed to be used with milk.

WAMPOLE'S MILK FOOD.

70	29919	3·75	7·40	55·80	17·40	73·20	11·62	2·46	.....	
71	22940	3·35	7·10	55·60	15·70	71·30	14·18	2·64	.... ..	
72	35870	2·53	7·20	57·15	16·75	73·90	12·43	2·44	....	
73	37578	2·40	7·45	55·70	19·30	75·00	11·81	2·68	.....	
	Means.	3·00	7·29	55·85	17·29	73·14	12·51	2·55	1·51	

WEMALTA.

74	40027	9·30	1·20	9·25	19·55	28·80	10·69	1·06	.....	Is directed to be prepared with water only.
75	39469	8·85	1·25	7·30	21·60	28·90	12·25	0·68	....	
76	36260	8·85	1·35	9·10	20·60	29·70	12·31	0·78	....	
	Means.	9·00	1·27	8·55	20·58	29·13	11·75	0·84	48·01	

WYETH'S PREPARED FOOD.

77	22936	3·00	1·30	46·00	22·30	68·30	14·69	3·50	7·21	

APPENDIX G.

BULLETIN No. 186—FERTILIZERS AS SOLD, 1909.

OTTAWA, September 10, 1909.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I beg to hand you a report upon 66 samples of fertilizers, obtained by our inspectors upon the open market in May and June of the present year. This is in accordance with the requirements of Section 6 of the Fertilizers Act (R.S. 1906, Chap. 132).

The usual difficulties have been met with in identification of brands, and 9 samples are either not identified, or doubtfully so. Sixteen (16) samples are not registered for 1909, as the Act requires; or, if registered, are not described so as to be certainly identified.

It is to be hoped that the difficulty of identification referred to will disappear with the coming into force of the New Fertilizer Act, which takes effect with the beginning of the new year (1910).

Thirty-eight (38) samples have been found up to the guaranteed values. This number includes two samples which, although not registered for 1909, were labelled with a guarantee percentage. Two samples are adjudged as 'nearly up to guarantee'; the deficiency being but little more than one (1) per cent of potash, in each case.

Two other samples show a decided excess of potash, above the amount guaranteed.

There remain three samples which show decidedly lower content of potash than the guarantee calls for. These are as follows:—

No.	Potash.	
	Guaranteed.	Found.
33969	10·00	3·15
36730	10·00	7·67
36294	8·00	4·95

On investigation it is found that these samples were taken from the top of the bag, they therefore indicate imperfect mixing rather than any intentional lowering of potash content.

I beg to recommend the publication of this report as Bulletin No. 186; and may add, for the information of parties interested that the text of the new Fertilizers Act is contained in Bulletin 182 (Standard Fertilizers, 1909) which will be mailed on request.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Name of Analyst.
			DISTRICT OF NOVA SCOTIA—				
1909.							
May 12..	Scotia Basic Slag..	33962	R. A. Beckwith, Amherst, N.S.	5 lb.	...	Alex. Cross & Sons, Glasgow, Scotland.	Bowman....
" 13..	Phosphate of Lime (Slag).	33963	E. H. & R. Cross, Truro, N.S.	5 lb.	....	Leeds Phosphate Works, Leeds, England.	" ....
" 13..	Potato Manure....	33964	A. J. Walker & Son, Truro, N.S.	5 lb.	10	Swift's Lowell Fert. Co., Lowell, Mass.	" . .
" 13..	"	33965	E. E. McNutt, Truro, N.S.	5 lb.	....	Pidgeon Fertilizer Co., Windsor, N.S.	" ....
" 14..	X L Brand.....	33966	E. Hebb, Bridgewater, N.S.	5 lb.	....	Bradley Co., Boston, Mass.	" ....
" 14..	Stockbridge Manure.	33967	W. O. Bates, Bridgewater, N.S.	5 lb.	....	Bowker Fert. Co., Boston, Mass.	" ....
" 17..	Pacific Guano.....	33968	G. Roy, Kentville, N.S.	5 lb.	....	Pacific Guano Co., Boston, Mass.	" ....
" 18..	G E High Grade Manure.	33969	C. O. Allen, Kentville, N.S.	5 lb.	....	Am. Agr. Chem. Co., New York.	" ....
" 18	Square Brand, Bone and Potash	33970	Burgess & Co., Wolfville, N.S.	5 lb.	....	Bowker's Fert. Co., Boston, Mass.	" ....
" 21	Potato Phosphate.	33971	Halifax Seed Store, Halifax, N.S.	5 lb.	15	Nova Scotia Fert. Co., Halifax, N.S.	" ....
June 18	Basic Slag, 20% Phosphate.	33972	S. B. Chute, Berwick, N.S.	5 lb.	....	Pilson, Scotland.	" ....
" 18	Aroostock Complete Manure.	33973	C. O. Cook & Son Waterville, N.S.	5 lb.	....	Am. Agr. Chem. Co., New York.	" ....
" 18	Bone Dust.....	33974	B. E. Ward, Weston, N.S.	5 lb.	...	J. T. Dow, Boston, Mass.	" ....
" 18.	Ground Bone.....	33975	T. H. Morse, Berwick, N.S.	5 lb.	....	New England Fert. Co., Boston, Mass.	" ....

SESSIONAL PAPER No. 14

FERTILIZERS AS SOLD.

Register Number.	Samples.	Results of Analysis.										Remarks and Opinion of the Chief Analyst.
		Nitrogen.		Phosphoric Acid.					Potash.	Moisture.	Relative Value per ton of 2,000 lbs.	Numer of Sample.	
		Total, including that of Nitric Acid or Ammonia, if present.	Total, calculated as Ammonia.	Soluble in Water.	Reverted or Citrate, Soluble.	Insoluble.	Total.	Total Available.					
	R. J. WAUGH, INSPECTOR.												
		p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	$ c.		
2374	Guarantee..	.....	....	...	.....	.....	16·00	....	....	...	.....	33962	
	Stand. Bull. 182	.....	....	....	15·18	6·62	21·80	15·18	.....	0·20	18·68		
	As found	.....	....	....	11·10	4·70	15·80	11·10	...	0·51	13·62	.....	Up to guarantee.
....	Guarantee	.....	....	...	.....	.....	.....	...	..	...	.....	33963	
	Stand. Bull. 182	.....	....	....	.....	.....	.....	.....	.....	.....	.....		
	As found	.....	....	....	11·85	4·65	16·50	11·85	.....	0·25	14·43	.....	Not registered for
2304	Guarantee..	1·65	2 00	...	.....	.....	8·00	7·00	4·00	....	17·61	33964	1909.
	Stand. Bull. 182	1·61	1·95	4·75	2·60	0·80	8·15	7·35	4·24	6·85	18·51		
	As found	2 31	2·81	3 60	3·65	1·00	8·25	7·25	3·29	14 75	19·78	....	Up to guarantee.
....	Guarantee.....	....	....	....	.....	.....	.....	.....	.....	.....	....	33965	
	Stand. Bull. 182	....	....	....	.....	.....	.....	.....	.....	.....	.....		
	As found	1·67	2·04	4·10	3·30	1·20	8 60	7·40	3·40	16·50	17·99	.....	Not registered for
2318	Guarantee.....	2·06	2·50	5·00	3·00	2·00	10 00	8 00	1·50	....	18·40	33966	1909.
	Stand. Bull. 182	2·13	2·58	6·75	3·45	2·25	12·45	10 20	1·60	11·25	21·41		
	As found	2·37	2·89	3·80	3·78	2·42	10·00	7·58	1·94	18·00	19·44	...	Up to guarantee.
2406	Guarantee..	3·30	4·00	....	....	.....	7·00	6·00	10·00	.. ..	28·12	33967	
	Stand. Bull. 182	3·50	4·25	5·90	1·96	1·19	9·05	7·86	8·90	9·25	30·39		
	As found	3·28	3·99	3·90	2·08	1·32	7·30	5·98	8·43	12·50	26·95	.....	Nearly up to guar-
....	Guarantee.. .. .	....	....	....	.....	.....	.....	...	.....	.....	.....	33968	antee.
	Stand. Bull. 182	....	....	....	.....	.....	.....	.....	.....	.....	.....		
	As found	2·65	3·23	3·10	4·58	3·52	11·20	7 68	2·00	14·00	20·82	.....	Not registered for
2376	Guarantee..	3·20	4·00	4·00	2·00	1·00	7·00	6·00	10·00	.....	28·18	33969	1909.
	Stand. Bull. 182	3·39	4·11	6·45	1·98	1·20	9·63	8·43	8·90	8·15	30·70		
	As found	2·79	3·40	5·95	3·58	2·97	12·50	9·53	3·15	10·50	24·55	.....	Low in potash,
2413	Guarantee.....	1·65	2 00	....	.....	.....	7·00	6 00	2·00	.....	14·51	33970	sample taken
	Stand. Bull. 182	1·85	2·24	6·20	3·65	3·35	13·20	9 85	1·95	10·05	20 70		from top of bag.
	As found	2·72	3 32	3·95	3·25	2·25	9·45	7·20	1·89	14·00	20·12	.....	Up to guarantee.
2384	Guarantee..	1·65	2 00	....	.....	2·00	9·00	7·00	4·00	.....	17·91	33971	
	Stand. Bull. 182	2·38	2·89	7·90	1·64	0·84	10·38	9·54	7 35	9·25	26·98		
	As found	2·79	3·40	2·85	4·03	2·22	9 10	6·88	3·20	12·25	21·20	. ...	"
....	Guarantee.....	.....	.....	....	.....	.....	.....	.....	.....	.....	....	33972	
	Stand. Bull. 182	.....	....	....	.....	.....	.....	.....	....	.....	.....		
	As found	.....	.....	...	13·75	6·65	20·40	13·75	.....	0·11	17·12	.....	Not registered for
2380	Guarantee.....	2·40	3·00	5·00	1·00	1·00	7·00	6·00	10 00	....	25·56	33973	1909
	Stand. Bull. 182	2·38	2·89	3·67	3·39	3·54	10·60	7·06	9·21	8·50	26·50		
	As found	2·72	3·32	3·45	3·83	1·57	9·15	7·58	8·73	11·50	26·80	.....	Up to guarantee,
....	Guarantee.....	1·65	2·00	....	....	.....	24·00	.....	.....	.....	.....	33974	Bag labelled
	Stand. Bull. 182	.....	.....	....	.....	.....	.....	.....	.....	.....	.....		with guarantee.
	As found	3·36	4·08	....	17·78	6·02	23·80	17·78	....	6·25	32·79	...	Up to guarantee,
2317	Guarantee.....	2·47	3 00	...	.....	.....	23 00	.....	.....	.....	..	33975	but not regis-
	Stand. Bull. 182	2·45	2·98	....	19 25	8·15	27·40	19·25	.....	4·25	31 95		tered for 1909.
	As found	3·28	3·99	....	17·60	5·15	22·75	17·60	.. .	5 50	32·06	.....	Up to guarantee.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Name of Analyst
DISTRICT OF PRINCE EDWARD ISLAND—							
1909.							
May 13..	Fertilizer.....	31498	A. Horn & Co., Charlottetown.	5 lb.	10	Swift's Lowell Fert. Co., Boston, Mass.	Bowman....
" 13.	"	31499	" " ..	5 lb.	10	" " ..	" ....
" 13..	"	31500	" " ..	5 lb.	10	" " ..	" ...
DISTRICT OF NEW BRUNSWICK—							
April 30..	Imperial Superphosphate.	29994	Ira B. Kierstead, St. John, N.B.	5 lb.	15	Prov. Chem. Fert. Co., Ltd., St. John, N.B.	Bowman....
May 4..	10% Complete Aroostook Potato.	29995	" " ..	5 lb.	15	" " ..	" ....
" 6..	Swift's Lowell Potato Manure.	29996	P. Nase & Son, St. John, N.B.	5 lb.	15	Swift's Lowell Fert. Co., Boston, Mass.	" ....
" 7..	Bradley's Potato Fertilizer.	29997	J. S. Gibbon & Co., St. John, N.B.	5 lb.	15	Am. Agr. Co., Bradley's Fert. Works, Boston, Mass.	" ....
" 17.	P. & P. Potato Grower with 10% Potash.	29998	George T. Baird Co., Ltd., Perth, N.B.	5 lb.	15	Parmenter & Polsey Fert. Co., Boston, Mass.	" ....
" 26..	Bowker's 6% Potato Fertilizer.	29999	D. J. Seely & Son, St. John, N.B.	5 lb.	15	The Bowker Fert. Co., Boston, Mass.	" ....
DISTRICT OF QUEBEC—							
April 26..	Complete Manure.	36728	Julien & Vézina, 1230 Rue St. Valier, Quebec.	5 lb.	15	The Am. Agr. Works, Buffalo.	Dr. Donald.
" 26..	Thomas' Phosphate.	36729	" " ..	5 lb.	15	Unknown.....	" ..
" 26..	Fruit and Vine....	36730	P. T. Légaré, Quebec.	5 lb.	15	Michigan Carbon Works, Detroit.	" ..
" 26..	Victor.....	36731	" " ..	5 lb.	15	J. F. Higginson & Son, Buckingham.	" ..

SESSIONAL PAPER No. 14

FERTILIZERS AS SOLD.

Register Number.	Samples.	Results of Analysis. Nitrogen. Total, including that of Nitric Acid or Ammonia, if present.	Nitrogen. Total, calculated as Ammonia.	Phosphoric Acid. Soluble in Water.	Reverted or Citrate, Soluble.	Insoluble.	Total.	Total Available.	Potash.	Moisture.	Relative Value per ton of 2,000 lbs.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
THEO. MOORE, INSPECTOR.		p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.			
.. .	Guarantee.....	.....	...	....	.	.....	. ...	.....	.....	.....	.....	31498	
	Stand. Bull. 182	. ...	...	...	.....	.....	.....	.....	.....	.....			
	As found.....	3·63	4·42	3·95	5·40	1·70	4·05	9 35	3·81	8·75	27·34	. .	Unregistered or
....	Guarantee.....	. ...	....	....	.....	.....	.....	.....	.....	...	.....	31499	not identified.
	Stand. Bull. 182..	.....	...	..	.....	.....	.....	.....	.....	.....			
	As found...	2 31	2 81	4·39	3 70	1·22	9·29	8·00	3·10	11·25	20·55	....	" ..
....	Guarantee.. ...	.. .	....	. ..	.....	....	.....	....	...	... .	.....	31500	
	Stand. Bull. 182..	...	...	...	.....	.....	.....	.....	.....	.....	.....		
	As found	2·51	3·06	3·65	2 91	0·52	7 05	6·56	4·13	11·25	20·40	.....	" ..
J. C. FERGUSON, INSPECTOR.													
2403	Guarantee..	2·97	3·61	...	.....	....	8·50	.....	2·53	...	.....	29994	
	Stand. Bull. 182..	2·80	3 40	6·75	0·64	0 46	7·85	7·39	2·37	15 15	18 70		
	As found.....	2·79	3·40	3·70	4·20	1·50	9·40	7·90	4·53	9·70	23·53	.....	Up to guarantee.
2399	Guarantee..	3·17	3·84	....	.....	...	7·97	.....	9.28	.....	. ...	29995	
	Stand. Bull. 182..	3·37	4·10	6·65	0·48	0·42	7·55	7·13	10·71	8·65	30·80		
	As found	3·71	4·51	5·20	0·28	1·02	6 50	5·48	8·07	10·50	27·54	.....	Nearly up to guar-
2301	Guarantee.....	1·65	2·00	...	.....	....	8·00	7·00	4·09	.....	17·61	29996	antee.
	Stand. Bull. 182..	1·61	1·95	4·75	2·60	0·80	8·15	7·35	4·24	6·85	18·51		
	As found	2·79	3·40	3·65	3·58	1·12	8·35	7·23	6·40	8·50	24·54	.....	Up to guarantee.
2319	Guarantee.....	2·06	2·50	5·00	3·00	2·00	10·00	8·00	3·00	.....	19·90	29997	
	Stand. Bull. 182..	1·91	2 34	7·10	3·55	2·35	13·00	10·65	2·77	13·90	22·39		
	As found	3·14	3·83	4·50	3·68	3·12	11·30	8·18	3·10	14 50	24·16	.....	"
....	Guarantee.....	.....	...	....	.....	.....	.....	.. ..	.....	... .	.....	29998	
	Stand. Bull. 182..	.....	...	...	.....	.....	.....	.....	.....	... ..	.....		
	As found	3·21	3·91	4·40	2·10	1·25	7·75	6·50	8 55	8·50	27 43	.....	Not registered for
2415	Guarantee..	0·82	1·00	....	. ...	.....	7 00	6·00	6·00	.....	15·69	29999	1909.
	Stand. Bull. 182..	1·12	1·36	4·93	3·82	2·55	11·30	8 75	5·11	14·24	19·80		
	As found	2·09	2·55	4·20	2·87	2·68	9·75	7·07	5·94	13·75	22·05	.....	Up to guarantee.
E. BELAND, INSPECTOR.													
2361	Guarantee.....	2 06	2·50	6·00	2·00	1·00	9·00	8·00	3·00	.....	19·70	36728	
	Stand. Bull. 182..	1 82	2·21	5·25	3·88	1·65	10 78	9·13	3·59	8·40	20·81		
	As found	2·25	2·73	5·74	3·11	1·40	10·25	.....	2·73	12·96	21·11	.....	Up to guarantee.
....	Guarantee..... .	.....	....	....	.....	.....	.....	.....	.....	.....	.....	36729	
	Stand. Bull. 182..	.....	....	....	.....	.....	.....	.....	.....	.....			
	As found	.....	...	....	12·61	6·40	19·61	.....	...	0·12	15·79	.....	Not registered for
2362	Guarantee.....	1·65	2·00	6·00	2·00	1·00	9 00	8·00	10 00	....	25·31	36730	1909, or not
	Stand. Bull. 182..	1·57	1·90	6·75	2·23	1·87	10·85	8 98	10·92	9·95	27·37		identified.
	As found	1·38	1·67	6·53	2 68	2·89	12·10	....	7·67	14·04	24·01	.....	Lowinpotash, sam-
2299	Guarantee.....	1·65	2·00	....	.....	...	7·00	.....	3 00	.....	.....	36731	ple taken from
	Stand. Bull. 182..	2·69	3·26	6·25	1·12	1·35	9·00	7·77	3·70	6·20	21·98		top of bag.
	As found	1·73	2 13	2·39	2 85	2·89	8·13	.....	2·03	5·18	15·18	.....	Up to guarantee.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Name of Analyst.
						DISTRICT OF ST. HYACINTHE—	
1909.							
May 26..	Soluble Pacific Guano.	38846	Albert Taylor & Co., Waterloo, P.Q.	5 lb.	....	The Am. Ag. Chem. Co., New York.	Dr. Donald.
" 26..	Victor	38847	Hayes & Marchessault, West Shefford.	5 lb.	....	Capelton Chem. & Fert. Co., Buckingham.	" ..
" 27 .	Scotia Phosphate Powder.	38848	L. Nadeau, Sabrevois.	5 lb.	....	Cross & Sons, Ltd., Glasgow, mfrs., Wm. Ewing & Co., Montreal, frs.	" ..
						DISTRICT OF MONTREAL—	
May 1..	Bradley's B.. ...	40056	Wm. Anderson, Herdmans, P.Q.	3 jrs	....	....	Dr. Donald.
" 1..	Alkaline Bone with Potash.	40057	" " ..	3 jrs	....	Am. Agr. Chem. Co.....	" ..
" 1..	Bradley's Potato..	40058	" " ..	3 jrs	....	.. ..	" ..
" 1..	Wilson's Special Bean and Grain.	40059	" " ..	3 jrs	....	. ...	" ..
" 5 .	Sure Growth.....	40060	Wm. Ewing & Co., 146 McGill St., Montreal.	3 jrs	....	W. A. Freeman & Co.,	" ..
" 5.	Potato Manure....	40091	" " ..	3 jrs	....	" " ..	" ..
" 5..	Crocker's Complete Manure.	40092	Wm. Rennie Co., Ltd., McGill St., Montreal.	3 jrs	..	....	" ..
						DISTRICT OF OTTAWA—	
May 28..	Sure Growth Manure.	41241	K. McDonald & Sons, Ottawa.	3 lb.	15	The W. A. Freeman Co., Ltd., Hamilton, Ont.	Dr. Donald.
" 28..	Royal Canadian...	41242	Graham Brothers. Ottawa.	3 lb.	10	Capelton Chemical & Fert. Co., Buckingham.	" ..
" 28..	Pure Bone Meal...	41243	" " ..	3 lb.	9	The W. A. Freeman Co., Ltd., Hamilton.	" ..

SESSIONAL PAPER No. 14

FERTILIZERS AS SOLD.

Register Number.	Samples.	Results of Analysis. Nitrogen. Total, including that of Nitric Acid or Ammonia, if present.	Nitrogen. Total, calculated as Ammonia.	Phosphoric acid. Soluble in Water.	Reverted or Citrate, Soluble.	Insoluble.	Total.	Total Available.	Potash.	Moisture.	Relative Value per ton of 2,000 lbs.	No. of Sample.	Remarks and Opinion of the Chief Analyst
J. C. ROULEAU, INSPECTOR.													
		p. c.	p.c.	p.c.	p. c.	p.c.	p.c.	p.c.	p.c.	p.c.	$ c.		
2330	Guarantee.....	2·06	2·50	5·00	3·00	2·00	10·00	8·00	1·50	. . .	18·40	38846	
	Stand. bull. 182..	1 86	2·26	6·70	3·38	2·02	12·10	10·08	1·55	11·50	20·24	.....	
	As found	1·93	2·34	4·97	2·99	2·88	10·84	.....	2 16	14·11	18·83	.....	Up to guarantee.
2299	Guarantee.	1·65	3·00	....	.....	.....	7·00	.....	3·00	.. ..	.....	38847	
	Stand. bull. 182..	2·69	3·26	6·25	1·12	1·35	9 12	7·77	3·70	6·20	21·98	.....	
	As found	1·51	1·83	2 97	3·42	2·18	8·57	...	3·43	4·22	16·50	.....	Up to guarantee; guarantee furnished by the inspector, from bag.
....	Guarantee*.....	....	....	...	.....	... .	.....	....	.....	.. . . .	...	38848	
	Stand. bull. 182..	.....	....	...	.....	... .	.....	....	.....	....	.....	...	
	As found	.... .	.....	...	8·02	6·22	14·24	.....	.....	0·15	10·69	.....	Up to guarantee, but not registered for 1909.
J. J. COSTIGAN, INSPECTOR.													
....	Guarantee.....	.....	....	....	.....	.....	.....	.....	.....	....	....	40056	
	Stand. Bull. 182..	....	....	....	.....	.....	.....	.....	.....	....	.....	.....	
	As found	1·01	1·22	6·09	2·63	1·49	10 21	.....	4·34	11·07	19·32	.....	Not registered for
2339	Guarantee.....	.....	...	6·00	5·00	1·00	12 00	11·00	2·00	. ...	15·00	40057	1909, or not
	Stand. Bull. 182..	0·21	0·25	10.00	2·98	2·82	15·80	12 98	1·80	12·15	18·63	.....	identified.
	As found	0·28	0·34	7·62	2·06	1·95	11·63	.....	2·32	11·43	15·27	....	Up to guarantee..
2319	Guarantee...	2·06	2 50	5·00	3·00	2·00	10·00	8·00	3·00	.....	19·90	40058	
	Stand. Bull. 182..	1·91	2·34	7·10	3·55	2 35	13·00	10 65	2·77	13·90	22 39	.....	
	As found	2·00	2·43	5·10	3·00	2 20	10 30	.....	2·60	12·84	19·48	.....	Up to guarantee..
....	Guarantee.....	.....	....	....	.....	.....	.....	.....	.....	.....	.....	40059	
	Stand. Bull. 182..	.. ..	...	...	.....	.....	.....	.....	.....	.....	.....	...	
	As found	0·31	0 37	8·28	1·59	1·76	11·63	.....	7·80	9·38	21·07	.....	Not registered for
2285	Guarantee.....	2·89	3·50	.	...	....	8·00	....	3·00	.....	.....	40060	1909.
	Stand. Bull. 182..	3·28	3·98	2 30	7·43	2 12	11·85	9·73	3·50	15·00	26·22	.....	
	As found	3·29	3·99	2 95	5·42	1·85	10 22	.....	3·99	14·77	25·13	....	Up to guarantee..
2283	Guarantee.....	2·47	3·00	....	.....	.....	8·00	.. .	5·00	... .	.....	40091	
	Stand. Bull. 182..	3·02	3·67	2 08	7·15	1·97	11·20	9·23	6·75	13·95	27·97	.....	
	As found	2·84	3·45	2·42	5·52	1.28	9 22	.....	8·26	15·32	27·28	.....	Up to guarantee..
2355	Guarantee..... ..	0·82	1·00	6·00	2·00	1·00	9·00	8·00	4·00	....	16 49	40092	
	Stand. Bull. 182..	1·05	1·28	6·73	1·20	3·27	11·20	7·93	3·77	11·15	17·72	.....	
	As found	1·06	1·29	6 07	2·10	1·31	9·48	.....	3·95	12·74	17·54	.....	Up to guarantee..
J. A. RICKEY, INSPECTOR													
2285	Guarantee.. . .	2 89	3·50	...	.....	.....	8·00	....	3·00	.. ..	... .	41241	
	Stand. Bull. 182..	3·28	3·98	2·30	7·43	2 12	11·85	9·73	3·50	15·00	26·22	.....	
	As found	3·18	3·86	3·39	5·31	1·84	10·54	....	3·91	13·61	25·18	.. .	Up to guarantee..
2297	Guarantee.....	3·29	4·00	....	.....	.....	9·00	....	5·00	.....	.....	41242	
	Stand. Bull. 182..	4·12	5·00	9·65	0·17	1·30	11·12	9·82	6·27	10·15	32·44	. ...	
	As found	3·04	3·69	3·53	1·12	2 85	7·50	.. .	6·95	6·17	23·61	.....	Up to guarantee..
2279	Guarantee.....	2 47	3·00	....	.....	.....	23·00	....	.....	.....	.....	41243	
	Stand. Bull. 182..	3·00	3·64	....	18·80	6·50	25·30	18·80	.....	11·00	32·83	.....	
	As found	2·60	3·16	....	15·08	10·46	26·54	.....	.....	6·30	28 57	.....	Up to guarantee .

* 30 to 35 per cent phosphate.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Addres of Manufacturer or Furnisher, as given by the Vendor.	Name of Analyst.
			DISTRICT OF KINGSTON—				
1909.							
May 4...	High Grade Potash.	41141	Earl Spencer, Picton.	5 liv	10	Am. Agr. Chem. Co., Buffalo.	F.X. Valade.
" 4...	Complete Fertilizer.	41142	" " ..	5 liv	10	" " .	" ..
" 4...	B. D. Sea Fowl Guano.	41143	" " ..	5 liv	10	" " ..	" ..
" 4...	New Method Fertilizer.	41144	" " ..	5 liv	10	" " ..	" ..
			DISTRICT OF TORONTO—				
May 6...	Crocker's N. Y. Special Phosphate.	36294	R. Moore & Son, Welland.	5 liv	15	Am. Agr. Chem. Co., Buffalo, N.-Y.	F.X. Valade.
" 6..	Crocker's Best Potash Compound.	36295	Titherington Bros., St. Catharines.	5 liv	15	" " ..	" ..
" 7...	Sure Growth.....	36296	The Steele Briggs Seed Co., Ltd., Hamilton.	5 liv	20	W. A. Freeman Fert. Works, Hamilton.	" ..
" 11...	Farm and Garden Manure.	36297	Wm. Rennie Co., Ltd., Toronto.	5 liv	10	Vendors.....	" ..
" 20...	Queen City Lawn Fertilizer.	36298	The Steele Briggs Seed Co., Ltd., Toronto.	5½ lv	50	The Am. Agr. Chem. Co., Boston, Mass,	" ..
			DISTRICT OF LONDON—				
May 12. .	Bone Meal.....	30677	James Heever & Son, Guelph.	3 liv	15	W. A. Freeman, Hamilton.	Dr. Donald.
" 12...	" "	30678	W. B. Doughty, Guelph.	3 liv	15	J. A. Simmers, Toronto..	" ..
" 13. .	" "	30681	John Byers, Stratford.	2 liv	10	John A Bruce, Hamilton.	" ..

SESSIONAL PAPER No. 14

FERTILIZERS AS SOLD.

Register Number.	Samples.	Results of Analysis. Nitrogen. Total, including that of Nitric Acid or Ammonia, if present.	Nitrogen. Total, calculated as Ammonia.	Phosphoric Acid. Soluble in Water.	Reverted or Citrate, Soluble.	Insoluble.	Total.	Total Available.	Potash.	Moisture.	Relative Value per ton of 2,000 lbs.	Number of Sample.	Remarks and Opinion of the Chief Analyst.
	JAS. HOGAN, INSPECTOR.												
		p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	$ c.		
2352	Guarantee	1·65	2·00	6·00	2·00	1·00	9·00	8·00	10·00	.....	25·31	41141	
	Stand. Bull. 182	1·58	1·92	7·15	1·08	2·02	10·25	8·23	10·79	9·90	26·54		
	As found	2·12	2·57	6·98	1·38	1·43	9·79	8·36	9·98	5·51	26·61	.....	Up to guarantee.
2263	Guarantee	1·65	2·00	6·00	2·00	1·00	9·00	8·00	4·00	.....	19·31	41142	
	Stand. Bull. 182	1·83	2·23	6·45	2·56	1·72	10·73	9·01	4·49	12·15	21·78		
	As found	2·40	2·91	7·21	1·79	1·90	10·90	9·00	9·76	11·44	29·11	.....	Much above guarantee in potash.
2359	Guarantee	2·06	2·50	6·00	2·00	1·00	9·00	8·00	1·50	.....	18·20	41143	
	Stand. Bull. 182	2·13	2·58	6·45	3·01	1·87	11·33	9·46	1·63	11·65	20·48		
	As found	2·29	2·78	5·80	2·21	2·71	10·72	8·01	2·30	13·33	25·09	.....	Up to guarantee.
2358	Guarantee	0·82	1·00	6·00	2·00	1·00	9·00	8·00	2·00	.....	14·49	41144	
	Stand. Bull. 182	1·09	1·33	7·48	1·80	2·22	11·50	9·28	2·13	7·80	17·46		
	As found	1·27	1·54	6·06	2·16	2·39	10·61	8·22	3·13	16·27	17·81	.....	"
	H. J. DAGER, INSPECTOR.												
2353	Guarantee	.....	.....	8·00	2·00	1·00	11·00	10·00	8·00	.....	20·10	36294	
	Stand. Bull. 182	.....	.....	7·65	2·25	1·25	11·15	9·90	7·76	6·00	19·79		
	As found	0·17	0·21	9·79	1·98	1·91	13·68	11·77	4·95	13·56	20·03	.....	Potash low, sample taken from top of bag.
2352	Guarantee	1·65	2·00	6·00	2·00	1·00	9·00	8·00	10·00	.....	25·31	36295	
	Stand. Bull. 182	1·58	1·92	7·15	1·08	2·02	10·25	8·23	10·79	9·90	26·54		
	As found	2·07	2·51	7·73	1·75	2·13	11·61	9·48	8·50	10·75	27·38	.....	Up to guarantee.
2285	Guarantee	2·89	3·50	.....	.....	.....	8·00	.....	3·00	.....	.....	36296	
	Stand. Bull. 182	3·28	3·98	2·36	7·43	2·12	11·85	9·73	3·50	15·00	26·22		
	As found	3·55	4·31	1·24	5·84	3·22	10·30	7·08	3·58	5·12	24·53	.....	"
....	Guarantee	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	36297	
	Stand. Bull. 182	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	As found	4·12	5·00	tr'ce	6·97	4·26	11·23	6·97	0·69	3·90	23·64	.....	Not registered for 1909, or not identified.
...	Guarantee	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	36298	
	Stand. Bull. 182	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	As found	4·89	5·94	3·04	2·42	2·71	8·17	5·46	3·27	10·26	27·02	.....	" " ..
	T. KIDD, INSPECTOR.												
2279	Guarantee	2·47	3·00	.....	.....	.....	20·00	.....	.....	.....	.....	30677	
	Stand. Bull. 182	3·00	3·64	....	18·80	6·50	25·30	18·80	.....	11·00	32·83		
	As found	2·78	3·37	...	14·36	10·80	25·16	.....	.....	7·97	28·49	.....	Up to guarantee.
....	Guarantee	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30678	
	Stand. Bull. 182	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	As found	4·50	5·46	....	14·30	9·30	23·60	.....	.....	6·52	33·82	....	Not registered for 1909.
....	Guarantee	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30681	
	Stand. Bull. 182	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	As found	3·36	4·36	....	10·17	9·58	19·75	.....	.....	5·56	25·48	....	" " ..

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Name of Analyst.
						DISTRICT OF WINDSOR—	
1909.							
April 26..	Bone Meal	35917	R. Hookway & Son, London.	3bts	....	Freeman Fert. Works, Hamilton.	F. X. Valade
" 26..	"	35918	Darch & Hunter, London.	3bts	....	Michigan Carbon Works, Detroit.	" ..
" 27..	Fertilizer.....	35919	J. H. McMeechan, London.	3bts	....	London Fert. Works, London.	" ..
" 27..	Celery and Early Vegetable Manure.	35920	A. M. Hamilton & Son.	3bts	....	W. A. Freeman, Hamilton.	" ..
						DISTRICT OF VANCOUVER—	
April 29..	Fertilizer B.....	37676	Brackman, Ker Milling Co., New Westminster.	5 lb.	25	Victoria Chem. Co., Victoria, B.C.	C. Fagan...
" 30..	Bone Meal	37677	Rennie Co., Ltd., Vancouver.	5 lb.	25	Brackman, Ker Milling Co., Vancouver.	" ..
" 30..	Fish Guano	37678	Brackman, Ker Milling Co., Vancouver.	5 lb.	20	B. C. Oilery, Vancouver.	" ..
May 1..	Blood and Bone..	37679	Brown Bros., Vancouver.	5 lb.	25	Vendors.	" ..
" 1..	Muriate of Potash.	37680	M. J. Henry, Vancouver.	5 lb.	25	Victoria Chem. Co., Victoria.	" ..
						DISTRICT OF VICTORIA—	
May 27..	Ground Bone. ...	39361	Sylvester Feed Co., Victoria, B.C.	5 lb.	10	Vendors.	C. Fagan...
" 27..	Salmon Guano....	39362	Brackman, Ker Milling Co.	5 lb.	12½	Fraser River Oil & Guano Co., Ltd., Vancouver.	" ..
" 27..	Whale Guano....	39363	"	5 lb.	12½	Pacific Whaling Co., Ltd., Vancouver.	" ..
" 28..	Bone and Blood..	39364	F. W. Savory.....	5 lb.	25	Frye, Bruhne & Co., Seattle, Wash.	" ..
" 28..	Fertilizer B.....	39365	Victoria Chem. Co., Ltd.	5 lb.	10	Vendors, Victoria, B C...	" ..

SESSIONAL PAPER No. 14

FERTILIZERS AS SOLD.

Register Number.	Samples.	Results of Analysis. Nitrogen. Total, including that of Nitric Acid or Ammonia, if present.	Nitrogen. Total, calculated as Ammonia.	Phosphoric Acid. Soluble in Water.	Phosphoric Acid. Reverted or Citrate, Soluble.	Phosphoric Acid. Insoluble.	Phosphoric Acid. Total.	Phosphoric Acid. Total Available.	Potash.	Moisture.	Relative Value per ton of 2,000 lbs.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
J. TALBOT, INSPECTOR.													
		p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.			
2279	Guarantee	2·47	3·00	...	..	.....	20·00	.....	.....	.....	.....	35917	
	Stand. Bull. 182	3·00	3·64	....	18·80	6·50	25·30	18·80	.. ..	11·00	32·83		
	As found	1·73	2·10	....	13·30	16·71	30·01	13·30	.....	7·76	25·52	.....	Up to guarantee.
...	Guarantee	.....	.....	.....	.....	.....	.....	.....	.....	.....	... .	35918	
	Stand. Bull. 182	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	As found	1·33	1·61	....	12·34	17·63	30·48	12·34	.....	3·30	18·10	....	Not registered for
2443	Guarantee	4·96	5·95	....	....	.....	16·70	.....	3·03	1·09	.....	35919	1909, or not
	Stand. Bull. 182	4·30	5·22	tr'ce	11·90	4·68	16·58	11·90	3·42	7·60	32·53		identified.
	As found	4·16	5·05	"	9·33	6·20	15·53	9·33	6·36	7·59	32·63	....	Much above guar-
2286	Guarantee	4·12	5·00	....	.....	.....	9·00	.....	5·00	.. ..	....	35920	antee in pot-
	Stand. Bull. 182	4·70	5·83	2·20	6·45	1·50	10·15	8·65	7·20	13·75	33·36		ash.
	As found	4·21	5·11	2·34	3·24	2·61	8·19	5·58	6·32	13·77	27·79	.....	Up to guarantee.
J. F. POWER, INSPECTOR.													
2391	Guarantee	3·50	4·25	....	.....	....	9·00	.....	11·00	.....	.....	37676	
	Stand. Bull. 182	3·07	3·72	8·64	1·89	0·58	11·11	10·53	11·35	... .	34·37		
	As found	3·64	4·42	8·50	....	0·20	8·70	.....	11·90	6·10	34·54	.....	Up to guarantee.
...	Guarantee	.	.. .	....	....	.....	... .	.....	.....	.....	.....	37677	
	Stand. Bull. 182	..	...	....	.....	.....	.....	.....	.....	.....	.....		
	As found	3·92	4·76	....	14·80	3·00	17·80	.....	.....	6·70	30·51	.....	Not registered for
....	Guarantee	....	....	....	.....	... .	.....	.....	.....	... .	.....	37678	1909 or not
	Stand. Bull. 182	.....	.....	....	.. .	.....	.....	.....	.....	.....	.....		identified.
	As found	7·56	9·16	....	7·90	0·20	8·10	.....	.....	7·60	34·45	.....	Not registered for
....	Guarantee	.....	.....	....	.....	.....	.....	... .	... .	.....	.....	37679	1909.
	Stand. Bull. 182	.....	.....	....	.....	.....	.....	.....	.....	.....	.....		
	As found	8·12	9·86	....	12·20	1·90	14·10	.....	.....	8·00	41·60	.....	Not registered for
2397	Guarantee	.....	.....	....	.....	.....	.....	.....	50·00	.....	50·00	37680	1909.
	Stand. Bull. 182	.....	.....	....	.....	.....	.....	.....	49·22	2·80	49·22		
	As found	.....	.....	....	.....	.....	.....	.....	54·10	3·20	54·10	.....	Up to guarantee.
D. O'SULLIVAN, INSPECTOR.													
....	Guarantee	..	....	....	....	.....	.....	....	.....	.....	.....	39361	
	Stand. Bull. 182	.....	.....	....	... .	.....	.....	.....	.....	.....	.....		
	As found	3·36	4·08	....	14·60	3·00	17·60	.....	....	10·10	28·38	.....	Not registered for
. ..	Guarantee	....	....	....	.....	.....	.....	.....	.....	.....	.....	39362	1909.
	Stand. Bull. 182	.....	.....	....	.....	.....	.....	.....	.....	.....	.....		
	As found	7·84	9·52	....	7·20	trace	7·20	.....	.....	7·20	16·54	.....	Not registered for
....	Guarantee	.....	.....	....	.....	.....	.....	.....	.....	.....	....	39363	1909.
	Stand. Bull. 182	.. .	.....	....	.....	.....	.....	.....	.....	.....	.....		
	As found	12·04	14·62	....	....	..	.....	.....	....	14·10	40·94	.....	Not registered for
....	Guarantee	.....	.....	....	.....	.....	.....	.....	...	.....	.....	39364	1909.
	Stand. Bull. 182	.....	.....	....	.....	.....	.....	.....	.....	.....	.....		
	As found	5·46	6·63	....	7·90	0·10	8·00	.....	....	9·70	27·28	....	Not registered for
2391	Guarantee	3·50	4·25	...	.....	.....	9·00	..	11·00	.....	.....	39365	1909.
	Stand. Bull. 182	3·07	3·72	8·64	1·89	0·58	11·11	10·53	11·35	13·25	34·37		
	As found	3·08	3·74	11·40	..	0·20	11·60	.....	11.50	8·90	35·71	.....	Up to guarantee.

APPENDIX H.

BULLETIN No. 187—DISTILLED LIQUORS, QUEBEC.

OTTAWA, September 15, 1909.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I have the honour to submit a report upon certain samples of distilled liquors, collected in the province of Quebec, during April and May of this year. This collection consists of 40 samples purchased as whisky, 40 samples purchased as gin, and 20 samples purchased as brandy, a total of 100 samples.

The inspection was made in consequence of a rumour to the effect that much spurious liquor was offered for sale in the province named. Instructions were given to procure samples at bar-rooms, and in such places as might be expected to furnish liquors of the lowest grades.

It is very satisfactory to note that none of the samples obtained give any evidence of being made, in whole or in part, from methylated spirit, or from wood alcohol; nor has the dissolved matter (See column headed 'Extract') been found to contain anything of an objectionable kind. Indeed, with the exception of 8 samples, the whiskies may be described as containing only negligible amounts of dissolved matters; and may be considered as merely diluted alcohol. The dilution is in many cases carried to an extreme. Only two (2) samples are within 25 per cent of proof strength; and if we acknowledged the legal validity of the limit for dilution of whisky which obtains in Great Britain, 95 per cent of these whiskies would have to be declared adulterated by addition of water. More than 30 per cent of the whisky samples fall short of containing half the alcohol strength known as proof. There can be no doubt that this constitutes a real fraud, and calls for legal redress. It will be noted that several vendors announced to our inspectors the fact of having added water to the whisky they sold.

The Sale of Foods and Drugs Amendment Act of 1879 (Great Britain) permits the sale of gin at a minimum strength of thirty-five degrees under proof. Twelve (12) samples, out of forty (40) examined fall below this standard of spirit strength. None of the samples of gin reach proof strength, although two samples approximate it.

The samples sold as brandy are with two exceptions up to the minimum spirit strength required by the British Standard.

The absence of any legal standards for spirits in Canada makes it impossible to pronounce upon the character of the samples now reported further than to say that they contain no methyl alcohol, and no substances that can be described as poisonous.

I beg to recommend the publication of this report as Bulletin No. 187.

I have the honour to be, sir.
Your obedient servant,

A. McGILL,
Chief Analyst.

BULLETIN No. 187—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Price.	Name and Address of the Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
						DISTRICT OF QUEBEC—	
1909.					$ c.		
April 13....	Whisky ..	36843	Cléophas Turcotte, 844 Rue St. Valier.	1 qt....	0 80	T. B. E. Letellier. Quebec.	.....
" 13....	" .	36844	Joseph Devarenne, Rue St. Valier.	1 "	0 70	Leclerc & Letellier, Quebec.	Whisky 'Wizer.'
" 13....	" .	36845	Eusèbe Frechette, 1094½ Rue St. Valier.	1 "	0 70	Romillac, Quebec..	....
" 13 ...	" .	36846	Louis Picard, 230 Rue Hermine.	1 "	0 70	T. Ledroit & Fils, Quebec.	.....
" 13....	" ..	36847	Pierre St. Michel, 34 Rue Durocher.	1 " ...	0 70	N. Rioux & Cie, Quebec.	Whisky 'Wizer.'
" 13....	" .	36848	T. C. Bélanger, 623 Rue St. Valier.	1 "	0 70	Whitead & Turner, Quebec.	Whisky 'Parker.'
" 13....	" .	36849	Gaudios Parent, 28 Rue Caron.	1 "	0 80	Joseph Falardeau, Quebec.	.....
" 13....	" .	36850	George Richard, 29 Rue de la Couronne.	1 "	0 60	T. B. E. Letellier, Quebec.	Whisky 'Blanc.'
" 13. ..	" .	36851	G. Germain, 455 Rue St. Valier.	1 "	0 70	" " ..	Whisky 'Wizer.'
" 13....	" .	36852	T. A. Martel, 32 Rue Dorchester.	1 "	0 70	Unknown	....
						DISTRICT OF ST. HYACINTHE—	
April 19....	Whisky ..	1067	C. E. Birtz, Drummondville.	1 qt....	0 70	R. O. Brodeur, St. Hyacinthe.	Whisky 'Tellier.'
" 20....	" ..	1068	James McGuire, Farnham.	1 "	0 60	McManamy & Co., Sherbrooke.	Whisky 'Blanc.'
" 26....	" .	1069	J. Lalarme, St. Hilaire Sta.	1 "	0 70	Lacaille, Gendron & Cie, Montreal.	....
" 28....	" .	1070	A. Petit, Roxton Falls..	1 " .. .	0 70	Hudon & Orsali, Montreal.	Gooderham whisky.
" 29....	" .	1071	Courtois & L'Allier, Arthabaskaville.	1 "	0 60	McManamy & Co., Sherbrooke.	.....
" 29....	" .	1072	U. Mahéu, Victoriaville.	1 "	0 65	H. H. Guay, Victoriaville.	Gooderham whisky.
May 5....	" .	1073	J. H. McDonnell, Sherbrooke.	3 flasks.	1 15	McManamy & Co., Sherbrooke.	Whisky 'Tellier.'
" 5....	" .	1074	W. Jamieson, Lennoxville	3 " .	1 15	Unknown	....
" 6....	" .	1075	F. J. Southwood, Sherbrooke.	1 qt....	1 15	McManamy & Co., Sherbrooke.	Rye. .....
" 6....	" .	1076	Hall & Nettleton, Rock Island.	1 qt....	1 00	" " ..	" ....

SESSIONAL PAPER No. 14

DISTILLED LIQUORS.

Results of Analysis.

Specific Gravity.	Alcohol, percentage. Weight.	Volume.	Proof Spirit.	Variation from 75 % Spirit Strength.	Examination for Methyl Alcohol. Density.	Alcohol, p.c.	Refraction. Found.	Theory.	Difference.	Extract grams per 100 c.c.	No. of Sample.	Remarks, and Opinion of the Chief Analyst.
E. BELAND, INSPECTOR.												
	p. c.	p. c.	p. c.	p. c.		p. c.	p. c.	p. c.	p. c.	p. c.		
0·9564	31·25	37·62	65·93	—19·07	0·9176	50·26	90·40	90·50	—0·1	0·014	36843	Below British standard strength.
0·9606	28·44	34·40	60·28	—14 72	0·9600	28·56	66·20	64·45	+1·75	0·011	36844	" " ..
0·9603	28·50	34·47	60·41	—14·59	0·9462	36·44	77·70	77·50	+0·2	0·019	36845	" " ..
0·9607	23·85	29·04	50·89	—14·11	0·9624	26·93	63·40	63·55	—0·15	0·007	36846	" " ..
0·9669	23·77	28·95	50·73	—14·27	0·9672	23·46	57·20	57·20	0·0	0·007	36847	" " ..
0·9571	29·80	35·97	63·03	—11·97	0·9509	34·10	74·30	74·60	—0·3	0·009	36848	" " ..
0·9557	31·50	37·90	66·43	— 8·57	0·9418	38·89	80·20	80·10	+0·1	0·010	36849	" " ..
0·9596	27·00	32·73	57·36	—17·64	0·9482	35·40	76·20	76.30	—0·1	0·010	36850	" " ..
0·9587	29·53	35·66	62·49	—12·51	0 9363	41·65	83·20	83 00	+0·2	0 012	36851	" " .
0·9504	34·76	41·58	72·87	— 2·13	0·9209	48·77	89·40	89·30	+0·1	0·009	36852	" " ..
J. C. ROULEAU, INSPECTOR.												
0·9661	24·80	30·16	52·86	—22·14	0·9564	30·78	70·30	70·10	+0·2	0·021	1067	Below British standard strength.
0·9535	33·22	39 86	69·84	— 5·16	0·9472	35·90	77·00	76·90	+0·1	0·009	1068	" " ..
0·9652	25·09	30·51	53·46	—21·54	0·9569	30·50	69·70	69 70	0·0	0·010	1069	" " ..
0·9555	31·81	38·25	67·05	— 7·95	0·9426	38·44	79·50	79·65	—0·15	0·018	1070	" " ..
0·9646	25·79	31·32	54·88	—20·12	0·9614	27·64	64·80	64·90	—0·1	0·009	1071	" " ..
0·9644	26·13	31·72	55·59	—19·41	0·9591	29·13	67 20	67·40	—0·2	0·049	1072	" " ..
0·9750	17·75	21·79	38·18	—36·82	0·9754	16·92	44·80	44·40	+0·4	0·012	1073	" " ..
0 9661	24·77	30·13	52·80	—22·20	0·9629	26·60	62·80	63·00	—0·2	0·007	1074	" " ..
0·9485	36·39	43·38	76·02	+ 1·02	0·9330	43·24	84 60	84·50	+0·1	0·247	1075	Up to standard strength in alcohol
0 9556	31·94	38·40	67·30	— 7·70	0·9393	40·15	81·60	81·65	—0 05	0·086	1076	Below British standard strength.

Date of Collection.	Name of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Price.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. — (Is not an expression of Opinion).
					$ c.		
DISTRICT OF MONTREAL—							
1909.							
April 20....	Whisky ..	40031	Louis Lamoureux, 139 Commissioners Street, Montreal.	1 qt....	0 35	.....	.....
" 20....	" ..	40032	J. B. Petelli, 19 Place Youville, Montreal.	"	0 35	.....	.....
" 20....	" ..	40033	T. H. Laganniére, 11 Common St., Montr'l.	"	0 60	L. Chaput Fils & Co.	.....
" 21....	" ..	40034	Alph. Casgrain, 32 St. Maurice St., Montreal.	"	0 60	.....	.....
" 21....	" ..	40035	George Simard, 954 St. James St., Montreal.	"	0 55	.....	.....
" 21....	" ..	40036	D. Gauthier, 125 Commissioners St., Montreal.	"	0 50	.....	.....
" 27....	" ..	40037	Joseph Valiquette, 127 Commissioners Street, Montreal.	"	0 40	.....	.....
" 27....	" ..	40038	Schetagne & Theoret, 65 Commissioners St., Montreal.	"	0 40	.....	.....
" 27..	" ..	40039	A. Robert, 93 St. Paul St., Montreal.	"	0 40	.....	.....
May 3...	" ..	40040	A. Roncais, 49 Craig St., Montreal.	"	0 45	.....	.....
DISTRICT OF OTTAWA—							
Mar. 16....	Whisky ..	22971	O. Gauthier, Hull.....	1 qt....	0 60	Unknown	Rye, added water
" 17....	" ..	22972	J. Fournier, Hull.....	"	0 70	Ottawa Wine Vaults, Ottawa.	Proof, added water.
" 17....	" ..	22973	F. A. Gauthier, Hull...	"	0 70	Unknown	Proof, added water.
" 17....	" ..	22974	M. J. Laverdure, Hull.	"	0 70	"	Rye.....
" 17....	" ..	22975	Mrs. A. Delorme, Aylmer, P.Q.	"	0 70	Major Bros., Ottawa.	Proof. .....
" 19....	" ..	22976	G. L. Brulé, Buckingham.	"	0 85	G. Duval, Buckingham.	Rye .....
" 19....	" ..	22977	J. Blais, Buckingham. .	"	0 90	"	Proof.....
" 19....	" ..	22978	T. Senecal, Buckingham	"	0 75	Major Bros., Ottawa.	Rye .....
" 19 ...	" ..	22979	Wm. Campbell, Buckingham.	"	0 90	Unknown	Proof.....
" 19...	" ..	22980	D. Bourgon, Buckingham.	"	0 90	Tourangeau & Champagne, Montreal.	Whisky Blanc.

SESSIONAL PAPER No. 14

DISTILLED LIQUORS.

Specific Gravity.	Alcohol, percentage. Weight.	Volume.	Proof Spirit.	Variation from 75% Spirit Strength.	Examination for Methyl Alcohol. Density.	Alcohol, p.c.	Refraction. Found.	Theory.	Difference.	Extract grams per 100 c.c.	No. of Sample.	Remarks, and Opinion of the Chief Analyst.
					Results of Analysis.							
	p. c.	p. c.	p. c.	p. c.		p. c.	p. c.	p. c.	p. c.	p. c.		
J. J. COSTIGAN, INSPECTOR.												
0·9666	24·08	29·31	51·37	—23·63	0·9334	43·05	84·50	84·30	+0·20	0·012	40031	Below British standard strength.
0·9676	23·54	28·68	50·25	—24·75	0·9524	33·24	73·40	73·35	+0·05	0·010	40032	" " ..
0·9687	22·85	27·86	48·82	—26·18	0·9614	27·64	64·80	61·90	—0·10	0·018	40033	" " ..
0·9649	25·50	30·98	54·30	—20·70	0·9283	45·41	86·70	86·55	—9·15	0·012	40034	" " ..
0·9877	29·93	36·12	63·30	—11·70	0·9435	37·94	79·20	79·05	+0·15	0·010	40035	" " ..
0·9721	19·92	24·38	42·73	—32·27	0·9707	20·75	52·00	52·00	—0·00	0·015	40036	" " ..
0·9703	21·46	26·22	45·95	—29·05	0·9529	32·94	72·80	73·00	—0·20	0·071	40037	" " ..
0·9700	21·46	26·22	45·95	—29·05	0·9584	29·60	68·00	68·25	—0·25	0·015	40038	" " ..
0·9533	26·33	31·96	56·00	—19·00	0·9367	41·45	83·20	82·80	+0·40	0·011	40039	" " ..
0·9691	22·54	27·49	48·18	—26·82	0·9435	37·94	79·20	79·05	+0·15	0·016	40040	" " ..
J. A. RICKEY, INSPECTOR.												
0·9638	29·73	35·89	62·90	—12·10	0·9686	22·38	55·30	55·10	+0·20	0·182	22971	Below British standard strength.
0·9657	28·00	33·89	59·40	—15·60	0·9386	40·50	81·80	81·85	—0·05	0·631	22972	" " ..
0·9569	32·75	39·32	68·92	— 6·08	0·9365	41·55	83·00	82·90	+0·10	0·760	22973	" " ..
0·9577	31·12	37·48	65·80	— 9·20	0·9394	40·10	81·50	81·60	—0·10	0·338	22974	" " ..
0·9636	27·93	33·81	59·26	—15·74	0·9407	39·45	80·60	80·80	—0·20	0·600	22975	" " ..
0·9492	35·60	42·51	74·49	— 0·51	0·9328	43·33	84·70	84·60	+0·10	0·286	22976	Up to standard strength in alcohol
0·9605	28·87	34·90	61·16	—13·84	0·9460	36·56	77·50	77·55	—0·05	0·017	22977	Below British standard strength.
0·9781	30·89	37·20	65·21	— 9·79	0·9457	36·72	77·80	77·70	+0·10	0·176	22978	" " ..
0·9668	23·92	29·13	51·05	—23·95	0·9577	30·06	69·00	69·05	—0·50	0·010	22979	" " ..
0·9620	28·37	34·33	60·16	—14·84	0·9557	31·19	70·40	70·60	—0·20	0·008	22980	" " ..

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Price.	Name and Address of the Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. — (Is not an expression of opinion).
					$ c.		
DISTRICT OF QUEBEC—							
1909.							
April 14....	Gin	36853	L. J. B. Beaulieu, 305 Rue St. Joseph, Quebec.	1 qt ..	0 80	L. T. B. Letellier, Quebec.	.....
" 14....	"	36854	A. Bergeron, 181 Rue Dorchester, Quebec...	1 "	0 90	T. B. E. Letellier, Quebec.	.....
" 14 ...	"	36855	L. Bertin, 128 Rue de la Couronne, Quebec...	1 "	0 80	U. Turcotte & Cie, Quebec.	.....
" 14....	"	36856	J. A. Godbout, 256 Rue du Roi, Quebec.	1 "	0 90	Myrand & Pouliot, Quebec.	.....
" 14....	"	36857	A. Larue, 84 Rue de la Couronne, Quebec.	1 "	0 70	T. Savard, Quebec.	.....
" 14....	"	36858	Jos. Tramblay, 254 Rue St. Joseph, Quebec.	1 "	0 75	S. A. Clark, Montreal.	.....
" 14....	"	36859	M. Racine, 23 Rue Notre Dame des Anges, Quebec.	1 "	0 85	T. B. E. Letellier, Quebec.	.....
" 14....	"	36860	P. Allaire, 15 Rue Notre Dame des Anges, Quebec.	1 "	0 90	Langlois & Paradis, Quebec.	.....
" 14....	"	36861	N. Bedard, 62 Rue de la Couronne, Quebec.	1 "	0 80	A. Toussaint & Cie, Quebec.	.....
" 14...	"	36862	J. Genest, 266 Rue Desfoses, Quebec.	1 "	0 80	T. B. E. Letellier, Quebec.	.....
DISTRICT OF ST. HYACINTHE—							
April 21....	Gin	1078	A. C. Poutre, St. Jean..	1 bot...	0 90	L. Moreau, St. Jean.	De Kuyper's....
" 23....	"	1079	S. Page, Granby	1 qt....	1 00	Laporte, Martin & Co., Montreal.	" ....
" 23 ...	"	1080	A. Bousquet, Abbotsford.	1 "	1 00	F. X. St. Charles & Cie, Montreal.	" ....
" 28....	"	1081	P. Cordeau, Upton.....	1 "	1 00	T. Berger, Upton	Melcher's. . .
May 5....	"	1082	H. Venilleux, Sherbrooke.	1 bot...	1 10	Unknown.....	.....
" 5 ...	"	1083	A. E. Cooper, Sherbrooke.	1 qt....	0 75	J. A. Gauthier & Cie, Sherbrooke.	De Kuyper's....
" 11....	"	1084	H. Bisson, St. Guillaume.	1 "	1 00	Unknown.....	" ....
" 11....	"	1085	W. Landry, Sorel	1 "	0 75	"	" ....
" 19....	"	1086	A. Beaudette, Sorel....	1 "	0 60	C. Labelle & Cie, Sorel.	Melcher's .....
" 19....	"	1087	L. Petit, Sorel	1 "	0 85	" " ..	De Kuyper... ..

SESSIONAL PAPER No. 14

DISTILLED LIQUORS.

Results of Analysis.												Remarks, and Opinion of the Chief Analyst.
Specific Gravity.	Alcohol, percentage. Weight.	Volume.	Proof Spirit.	Variation from 65 % Spirit Strength.	Examination for Methyl Alcohol. Density.	Alcohol, p.c.	Refraction. Found.	Theory.	Difference.	Extract grams per 100 c.c.	No. of Sample.	
E. BELAND, INSPECTOR.												
	p. c.	p. c.	p. c.	p. c.		p. c.	p. c.	p. c.	p. c.	p. c.		
0·9368	41·10	48·54	85·06	+20·06	0·9299	44·68	86·00	85·90	+0·10	0·025	36853	
0·9446	37·28	44·36	77·75	+12·75	0·9354	42·10	83·50	83·40	+0·10	0·023	36854	
0·9447	37·50	44·61	78·18	+13·18	0·9381	40·75	82·40	82·20	+0·20	0·014	36855	
0·9392	39·50	46·80	82·02	+17·02	0·9244	47·18	88·20	87·95	+0·25	0·011	36856	
0·9494	34·33	41·11	72·04	+ 7·96	0·9428	38·33	79·45	79·45	0·00	0·023	36857	
0·9478	35·35	42·23	74·01	+ 9·01	0·9335	43·00	84·40	84·25	+0·15	0·017	36858	
0·9472	35·30	42·17	73·91	+ 8·91	0·9341	42·71	84·10	84·00	+0·10	0 025	36859	
0·9046	36·22	43·19	75·70	+10·70	0·9293	44·96	86·30	86 15	+0·15	0·025	36860	
0·9415	38 11	45·28	79·36	+14·36	0·9310	44·18	85·50	85·45	+0·05	0·018	36861	
0·9425	37·56	44·67	78·28	+13·28	0·9287	45·25	86·50	86·40	+0 10	0·036	36862	
J. C. ROULEAU, INSPECTOR.												
0·9421	38·44	45·65	80·00	+15·00	0·9281	47·77	88·60	88·45	+0·15	0·007	1078	
0·9219	48·82	56·63	99·24	+34·24	0·9015	57·42	95·10	94·90	+0 20	0·010	1079	
0·9419	38·50	45·71	80·11	+15·11	0·9316	43·90	85·20	85·15	+0·05	0·011	1080	
0·9320	43·90	51·53	90·30	+25·30	0·9295	44·86	86·20	86·10	+0·10	0 059	1081	
0·9475	35·55	42·45	74·39	+ 9·39	0·9429	38·28	79·60	79·45	+0·15	0·033	1082	
0·9242	25·86	31·40	55·03	— 9·97	0·9352	32·75	72·80	72·75	+0 05	0·269	1083	
0·9223	48·14	55·93	98·01	+33·01	0·9089	54·05	93·20	93·00	+0·20	0·033	1084	
0·9478	35·65	42·56	74·59	+ 9·59	0·9406	39·50	80·90	80·80	+0·10	0·042	1085	
0·9605	28·44	34·40	60·28	— 4·72	0·9531	32 81	72·70	72·80	—0·10	0·015	1086	
0·9217	45·91	53·62	93·98	+28·98	0·9151	51·33	91·50	91 25	+0·25	0·024	1087	

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Price.	Name and Address of the Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. — (Is not an expression of opinion.)
					$ c.		
DISTRICT OF MONTREAL—							
1909.							
April 20....	Gin	40041	Louis Lamoureux, 129 Commissioners St., Montreal.	1 qt ...	0 35	....	....
" 20....	"	40042	J. B. Petelli, 19 Rue Youville, Montreal.	1 "	0 60	F. X. St. Charles.	....
" 20....	"	40043	J. H. Lagannière, 11 Common St., Montreal	1 "	0 70	....	... .
" 21....	"	40044	Alph. Casgrain, 32 St. Maurice St., Montreal.	1 "	0 60	....	... .
" 21....	"	40045	Geo. Simard, 954 St. James St., Montreal.	1 " ...	0 65	.....	.....
" 21....	"	40046	D. Gauthier, 125 Commissioners St., Montreal.	1 "	0 75	.....	....
" 27 ...	"	40047	Joseph Valiquette, 127 Commissioners St., Montreal.	1 "	0 70	....	....
May 3....	"	40048	P. Vandelac & Co., 33 Jacques Cartier St., Montreal.	1 "	0 70	....	.....
" 3 ..	"	40049	L. Bachaud, 209 St. Paul St., Montreal.	1 "	0 50	.. ..	....
" 3....	"	40050	A. Langlois, 82 Berri St., Montreal.	1 "	0 70	... .	....
DISTRICT OF OTTAWA—							
Mar. 16..	Gin	22981	A. C. Latour, Hull.....	1 qt....	0 90	Ottawa Wine Vaults, Ottawa.	Red Cross; added water.
" 16....	"	22982	D. Charron, Hull.....	1 "	0 55	Melchers, Berthierville.	" " ..
" 22....	"	22983	T. A. James, Shawville.	1 "	1 00	Chaput Fils & Cie, Montreal.	....
" 22. ..	" ..	22984	C. Caldwell, Shawville..	1 "	1 00	Unknown	....
" 26....	"	22985	N. Tellier, Hull.... ...	1 "	0 90	Melchers, Berthierville.	Red Cross.....
" 26....	" .. .	22986	S. Desmarais, Hull.....	1 "	0 80	Unknown	... .
" 26....	"	22987	D. Gravelle, Hull. .. .	1 "	0 85	S. J. Major, Ltd., Ottawa.	....
" 26....	"	22988	Chas. O'Connor, Hull...	1 "	0 75	" "	.....
" 27...	"	22989	J. F. Kennedy, Quyon..	1 "	0 90	Chaput Fils & Co., Montreal.	....
" 27....	"	22990	James McCann, Quyon.	1 "	1 00	S. J. Major, Ltd., Ottawa.	Red Cross .. .

SESSIONAL PAPER No. 14

DISTILLED LIQUORS.

Specific Gravity.	Alcohol, percentage.			Variation from 65 % Spirit Strength.	Examination for Methyl Alcohol.					Extract grams per 100 c.c.	No. of Sample.	Remarks, and Opinion of the Chief Analyst.
	Weight.	Volume.	Proof Spirit.		Density.	Alcohol, p.c.	Refraction.					
							Found.	Theory.	Difference.			
J. J. COSTIGAN, INSPECTOR.												
	p. c.	p. c.	p. c.	p. c.		p. c.	p. c.	p. c.	p. c.	p. c.		
0·9499	34·52	41·32	72·41	+ 7·41	0·9492	34·90	75·90	75·75	+0·15	0·088	40041	
0·9606	28·19	34·11	59·78	— 5·22	0·9535	32·56	72·60	72·50	+0·10	0·011	40042	
0·9601	28·06	33·97	59·53	— 5·47	0·9535	32·56	72·50	72·50	none.	0·011	40043	
0·9553	31·75	38·18	66·93	+ 1·93	0·9481	35·45	76·40	76·40	0·00	0·019	40044	
0·9598	28·62	34·61	60·66	— 4·34	0·9507	34·19	74·70	74·75	—0·05	0·010	40045	
0·9700	21·23	25·95	54·47	—10·53	0·9697	21·54	55·30	55·30	0·00	0·026	40046	
0·9541	28·87	34·90	61·16	— 3·84	0·9547	31·81	71·30	71·40	—0·10	0·080	40047	
0·9608	27·71	33·56	58·82	— 6·18	0·9608	28·06	65·50	65·60	—0·10	0·014	40048	
0·9613	27·57	33·39	58·53	— 6·47	0·9446	37·33	78·60	78·40	+0·20	0·015	40049	
0·9468	36·22	43·19	75·70	+10·70	0·9289	45·14	86·30	86·30	0·00	0·034	40050	
J. A. RICKEY, INSPECTOR.												
0·9442	37·94	45·10	79·04	+14·04	0·9366	41·50	83·00	82·85	+0·15	0·259	22981	
0·9286	44·86	52·53	92·06	+27·06	0·9015	57·42	95·10	94·90	+0·20	0·010	22982	
0·9576	29·53	35·66	62·49	— 2·51	0·9494	34·81	75·40	75·60	—0·20	0·047	22983	
0·9329	43·71	51·32	89·95	+24·95	0·9290	45·09	86·40	86·25	+0·15	0·053	22984	
0·9327	43·43	51·02	89·41	+24·41	0·9335	43·00	84·50	84·25	+0·25	0·036	22985	
0·9599	29·33	35·43	62·09	— 2·91	0·9509	34·10	74·70	74·60	+0·10	0·469	22986	
0·9547	31·75	38·18	66·93	+ 1·93	0·9572	30·33	69·50	69·40	+0·10	0·129	22987	
0·9598	29·33	35·43	62·09	— 2·91	0·9546	31·87	71·40	71·50	—0·10	0·347	22988	
0·9487	35·40	42·29	74·10	+ 9·10	0·9565	30·72	69·80	70·00	—0·20	0·260	22989	
0·9341	42·14	49·66	87·02	+22·02	0·9279	45·59	86·90	86·70	+0·2	0·021	22990	

BULLETIN No. 187—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Price.	Name and Address of the Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).
							DISTRICT OF QUEBEC—
1909.					$ c.		
April 15....	Brandy...	36863	Alphonse Mathieu, 156 Rue de Pont, Quebec.	1 qt....	1 20	F. Savard, Quebec.	.....
" 15....	" ..	36864	Louis Robitail, 154 Rue de Pont, Quebec.	1 "	1 20	Unknown	.....
" 15....	" ..	36865	François Rathé, 188 Rue de Pont, Quebec.	1 "	1 20	T. Ledroit & Fils, Quebec.	.....
" 15....	" ..	36866	Edouard Poulin, 97 Rue St. Joseph, Quebec.	1 "	1 20	A. Toussaint & Cie, Quebec.	.....
" 15....	" ..	36867	Charle Vezina, 46 Rue Desfoses, Quebec.	1 "	1 20	Unknown	.....
							DISTRICT OF ST. HYACINTHE—
April 20 ...	Brandy...	1089	G. A. Rivard, Farnham	1 qt....	1 50	Boivin, Wilson & Co., Montreal.	.....
" 21....	" ..	1090	H. Cartier, St. John....	1 "	1 00	Unknown	.....
" 28....	" ..	1091	W. Langlois, Actonvale.	1 "	1 25	A. E. Mallette & Co., Montreal.	Hennessey .....
May 5....	" ..	1092	W. DesRuisseau, E. Sherbrooke.	1 "	1 15	Unknown	Pellisson .....
" 10....	" ..	1093	D. Dupuis, St. Joseph de St. Hyacinthe.	1 "	1 25	Fournier & Fournier, St. Hy'cte.	.....
							DISTRICT OF MONTREAL—
April 27 ...	Brandy...	40051	Schetagne & Theoret, 65 Commissioners Street, Montreal.	1 qt....	0 95	.....	.....
" 27....	" ..	40052	A. Robert, 93 St. Paul St., Montreal.	1 "	0 75	.....	.....
May 3....	" ..	40053	P. Vandelac & Co., 33 Jacques Square, Montreal.	1 "	1 00	.....	.....
" 3....	" ..	40054	L. Bachaud, 207 St. Paul St., Montreal.	1 "	1 20	.....	.....
" 3....	" ..	40055	H. Courtois, 2 Berrie St., Montreal.	1 "	1 15	.....	.....
							DISTRICT OF OTTAWA—
Mar. 17 ...	Brandy...	22991	E. Bell, Aylmer, P.Q...	1 qt....	1 40	H. N. Bate & Son, Ottawa.	.....
" 17....	" ..	22992	N. Noël, Aylmer, P.Q...	1 " ...	1 40	S. J. Major, Ltd., Ottawa.	.....
" 19....	" ..	22993	A. Maisonneuve, Buckingham.	1 " ...	1 25	Ottawa Wine Vaults Ottawa.	.....
" 26 ...	" ..	22994	L. St. Pierre, Hull.....	1 " ...	1 40	L. H. Major, Ottawa.	.....
" 27 ...	" ..	22995	M. Doyle, Quyon	1 "	1 50	Ottawa Wine Vaults, Ottawa.	.....

SESSIONAL PAPER No. 14

DISTILLED LIQUORS.

Results of Analysis.

Specific Gravity.	Alcohol, percentage. Weight.	Volume.	Proof Spirit.	Variation from 75 % Spirit Strength.	Examination for Methyl Alcohol. Density.	Alcohol, p.c.	Refraction. Found.	Theory.	Difference.	Extract grams per 100 c.c.	No. of Sample.	Remarks, and Opinion of the Chief Analyst.
E. BELAND, INSPECTOR.												
	p. c.	p. c.	p. c.	p. c.		p. c.	p. c.	p. c.	p. c.	p. c.		
0·9360	43·29	50·87	89·15	+14·15	0·8972	59·30	96·00	95·85	+0·15	0·730	36863	
0·9459	38·06	45·22	79·25	+ 4·25	0·9100	53·57	92·90	92·70	+0·20	0·597	36864	
0·9534	33·94	40 67	71·27	— 3·73	0·9458	36·67	77·80	77·70	+0 10	0·430	36865	
0·9534	39·75	47 08	82·50	+ 7·50	0·9194	49·44	90·00	89·85	+0·15	0·565	36866	
0·9352	43·76	51·38	90·03	+15·03	0·9044	56·14	94·20	94 20	0·00	0·718	36867	
J. C. ROULEAU, INSPECTOR.												
0·9507	41·10	48·54	85·06	+15·06	0·9359	41·85	83·20	83·20	0 00	0·565	1089	
0·9378	44·36	52 01	91·14	+16·14	0·9282	45·46	86·80	86·60	+0·20	1·656	1090	
0·9195	50 39	58·23	102·05	+27·05	0 9157	51·08	91·20	91·10	+0·10	0 344	1091	
0·9521	35·20	42·06	73·72	— 1·28	0·9365	41·55	82·80	82·90	—0·10	0 626	1092	
0·9431	38 89	46·14	80·86	+ 5·86	0·9260	46·46	87·60	87·60	0·00	0·223	1093	
J. J. COSTIGAN, INSPECTOR.												
0·9524	34·67	41·48	72 68	+ 2·32	0·9305	44·41	85·70	85·65	+0·05	0·679	40051	
0·9504	37·39	44·49	77·96	+ 2 96	0 9262	46·36	87·40	89·30	+0·10	0 635	40052	
0·9449	38 39	45·59	79 89	+ 4 89	0·9287	45·23	86·50	86·40	+0·10	0·560	40053	
0·9245	48·96	56·77	99·49	+24·49	0 9130	52·23	91·80	91·75	+0·05	0·923	40054	
0·9274	47·23	54·99	96·37	+21·37	0·9000	58·05	95·20	95·20	0·00	0·491	40055	
J. A. RICKEY, INSPECTOR.												
0 9296	45·09	52·77	92·48	+17·48	0·9181	50·04	90·50	90·30	+0·20	0·259	22991	
0·9438	39·65	46 97	82·31	+ 7 31	0 9316	43·90	85·20	85·15	+0·05	0·666	22992	
0·9339	43·43	51 02	89·41	+14·41	0 9119	53·09	92·50	92·30	+0·20	0·274	22993	
0·9290	46·86	54·62	95·71	+20·71	0·9162	50·87	91·20	91·00	+0·20	1·155	22994	
0·9440	38·89	46·14	80·86	+ 5·86	0·9270	46·00	87·20	87·00	+0·20	0·397	22995	

APPENDIX I.

BULLETIN No. 188—LIQUOR PICIS CARBONIS (SOLUTION OF COAL TAR.)

OTTAWA, September 20, 1909.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I have the honour to submit herewith a report upon the examination of twenty-four (24) samples purchased by our inspectors as Liquor Picis Carbonis (Solution of Coal Tar).

The British Pharmacopœia directs this article to be prepared as follows—'Digest for two days at 120° F., one part by weight of prepared coal tar, in five of a Tincture of Quillaia (1 in 10, alcohol 90 per cent.) Decant, or filter when cold.'

The finished Liquor Picis Carbonis should therefore contain about 75 per cent of its weight of 90 per cent alcohol; or approximately 67·5 per cent of its weight of absolute alcohol. Allowing for evaporation and loss, it may be reasonable to accept 60 per cent by weight, or 67 per cent by volume, in the article as dispensed. In all samples containing alcohol, the content of alcohol meets quantitative requirements.

An alcoholic solution of coal tar, known as *Liquor Carbonis Detergens*, is much employed in the treatment of skin diseases. This is not official, and is not to be confounded with *Liquor Picis Carbonis*, as above described.

Various solutions of coal tar, some of them being proprietary articles, are found on the market. Five samples of this character have been accepted by our inspectors. In accepting these articles, unless expressly supplied as Liquor Picis Carbonis, our Inspectors are at fault.

This is clearly the case in Nos. 987 and 988, which are distinctly labelled '*Goudron de Norvége*', and are proprietary. They contain no alcohol. Nos. 41170 and 41171 (Kingston) and 41345 (Toronto) are likewise non-alcoholic solutions of tar. If they were offered as *Liquor Picis Carbonis*, the vendor is guilty of substitution. It would appear from the remarks of the inspector that No. 41345 was actually so supplied, but in good faith. See App. D. Liquor Picis Carbonis is the only solution of coal tar officially authorized by the British Pharmacopœia. Several other solutions of Coal Tar are more or less widely known and used. As long as these comply with the requirements of the Patent or Proprietary Medicines Act, they are properly enough dispensed, when asked for. But they must not be supplied when Liquor Picis Carbonis, or Official Solution of Coal Tar is demanded.

Of the remaining 19 samples, 13 correspond to the pharmacopœial requirements, and are genuine. Six samples are adulterated, in the sense that they are made with wood alcohol, or with methylated spirit, instead of with ethyl alcohol as required by the Pharmacopœia. The Inland Revenue Act (R. S. C. 34) enacts as follows (S. 26ᴳ):—'Every person who uses spirits containing methyl alcohol in any form, in any pharmaceutical or medicinal preparation intended for internal use, shall be liable to a penalty of five hundred dollars.'

The Inland Revenue Amendment Act, of 1908, further enacts (Sec. 7):—'Every person who uses methyl alcohol, or spirits containing methyl alcohol in any pharmaceutical, medicinal or other preparation intended for external use shall affix to the vessel containing the said preparation a label stating, in black letters not less than one-

fourth of an inch in height, the presence of methyl alcohol therein; and any person violating the provisions of this subsection shall incur a penalty not less than fifty dollars and not exceeding two hundred dollars.' Although five samples are found to be technically adulterated, I am convinced that in no case has there been any intent to commit fraud. Failure to meet the requirements of the Act apparently results from non-acquaintance with these requirements. The Inland Revenue Amendment Act was assented to April 10, 1908, up to which date the employment of wood alcohol in preparations for external use, without declaration, was not illegal. My justification in advising that no legal action be taken in the present case (the first official inspection of Liquor Picis Carbonis) must be found in the above remarks, and in excerpts from correspondence which appear as appendices to this report.

I beg to recommend the publication of this report as Bulletin No. 188.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

BULLETIN No. 188—LIQUOR PICIS

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of the Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
			DISTRICT OF NOVA SCOTIA—				
1909.							
Aug. 17..	Liq. Picis Carbonis (solution of coal tar).	41736	National Drug Co., Halifax, N.S.	6 oz..	75	Nat. Drug and Chem. Co., Montreal.	Liq. Picis Carb. B.P.
" 17..	" " ..	41737	Brown Bros. & Co., Halifax, N.S.	6 " ..	75	" " ..	" " ..
			DISTRICT OF PRINCE EDWARD ISLAND—				
July 28..	Liq. Picis Carbonis (solution of coal tar).	38571	P. N. Enman, Summerside.	6 oz..	90	W. V. Wright, Southwark, London.	.. ..
" 29..	" " ..	38572	C. D. Rankin, Charlottetown.	6 " ..	90	" "	.....
			DISTRICT OF NEW BRUNSWICK—				
July 20..	Liq. Picis Carbonis (solution of coal tar).	39536	The Nat. Drug Co., Ltd., St. John, N.B.	6 oz..	60	Vendors.....	....
" 26..	" " ..	39537	A. Chipman Smith & Co.	6 " ..	90	W. V. Wright & Co., Southwark, London.	Wright's Liq. Carbonis
			DISTRICT OF ST. HYACINTHE—				
Aug. 3..	Liq. Picis Carbonis (solution of coal tar).	987	Griffith's Pharmacy, Sherbrooke.	1 bot.	25	Dr. J. G. Laviolette, Montreal.	Goudron de Norvège (Liquer concentrée.)
" 10..	" " ..	988	St. Jacques Pharmacy, St. Hyacinthe.	1 " .	75	Guyot à Paris, France.	Gondron Guyot. (Solution not guaranteed).
			DISTRICT OF MONTREAL—				
July 20.	Liq. Picis Carbonis (solution of coal tar).	40283	B. Fox, 168 St. Lawrence B., Montreal.	6 oz..	60	Nat. Drug and Chem. Co., Montreal.	.....
" 20	" " ..	40284	John J. Weinfeld, 197 Bleury St., Montreal.	6 " ..	60	Unknown.....	.....

SESSIONAL PAPER No. 14

CARBONIS (SOLUTION OF COAL TAR).

Results of Analysis.											
Density of Sample.	Approximate Alcohol, p. c.		Examination for Methyl Alcohol.						No. of Sample.	Remarks, and Opinion of the Chief Analyst.
	Weight.	Volume.	Density.	Alcohol by Weight.	Refraction.			Methyl Alcohol.		
					Found.	Theory	Difference.			
R. J. WAUGH, INSPECTOR.										
	p.c.	p.c.		p.c.				p.c. of total Alcohol.		
0·8656	72·70	79·27	0·9452	37·00	78·3	78·00	+0·3	none.	41736	Genuine.
0·8656	72 70	79·27	0·9576	30·11	69 0	69 14	—0·14	none	41737	"
THEO. MOORE, INSPECTOR.										
0·8814	66·09	73 38	0·9406	39·56	80·8	80·8	0·0	none	38571	Genuine.
0·8864	63·96	71·42	0·9721	19·58	49·5	49·7	—0·2	none	38572	"
J. C. FERGUSON, INSPECTOR.										
0·8464	80·79	86·15	0·9394	40·10	75·5	81·6	—6·1	14·0	39536	Adulterated. See Appendix A.
0·8829	65·46	72·80	0·9270	46·00	86·7	87·0	—0·3	none	39537	Genuine.
J. C. ROULEAU, INSPECTOR.										
1·0110	none	none	.....	.....	....	.....	...	.....	987	Proprietary.
1·0199	none	none	.....	....	...	.....	...	.....	988	"
J. J. COSTIGAN, INSPECTOR.										
0·8634	73·63	80·08	0·9701	16·38	43 2	42·9	+0·3	none	40283	Genuine.
0·8619	74·27	80·64	0·9775	15 25	41·0	41·0	0 0	none	40284	"

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of the Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
DISTRICT OF OTTAWA—							
1909.							
Sept. 1..	Liq. Picis Carbonis (solution of coal tar).	41279	Nat. Drug and Chem. Co., Ltd., Ottawa.	8 oz..	70	Vendors..	Labelled 'Liq. Picis Carbonis B P.'
" 1.	" " ..	41280	Lymans, Ltd., Ottawa..	8 " ..	68	Lymans, Ltd., Montreal.	" " .
DISTRICT OF KINGSTON—							
Aug. 5..	Solution of coal tar.	41170	Nat. Drug Co., Kingston.	6 oz..	8		... ...
" 6..	" " ..	41171	R. Templeton, Belleville.	6 " ..	8	A. Ramsay & Son, Montreal.	....
DISTRICT OF TORONTO—							
Aug. 13..	Liq. Picis Carbonis (solution of coal tar).	41344	A. E. Legge, Toronto...	6 oz..	35	The E. B. Shuttleworth Chem. Co., Ltd., Toronto.	Liq. Carbonis Detergens. Sold as Liq. Picis Carbonis
" 13..	" " .	41345	Hargreaves Bros., 162 Queen St. West, Toronto.	6 " ..	25	Lyman, Knox & Clarkson, Toronto.	Sold as Liq. Picis Carbonis.
DISTRICT OF LONDON—							
July 23..	Liq. Picis Carbonis (solution of coal tar).	30695	C. E. Nasmith & Co., Stratford.	3 bot.	60	E. B. Shuttleworth & Co., Toronto.	....
" 29..	Liq. Carbonis detergens.	30809	J. E. Hovey, Clinton...	3 oz..	25	J. Winer & Co., Hamilton.	Liq. Carbonis Detergens.
DISTRICT OF WINDSOR—							
July 28..	Liq. Picis Carbonis (solution of coal tar).	35998	Anderson & Nelles, London.	6 oz .	60	Nat. Drug Co., Montreal.	..... .
" 28..	Solut. of coal tar	35999	W. T. Strong, London..	6 " .	60	Vendor	....

SESSIONAL PAPER No. 14

CARBONIS (SOLUTION OF COAL TAR).

Results of Analysis.												
Density of Sample.	Approximate Alcohol, p.c.		Examination for Methyl Alcohol.							No. of Sample.	Remarks, and Opinion of the Chief Analyst.
	Weight.	Volume.	Density.	Alcohol by Weight.	Refraction.			Methyl Alcohol.			
					Found.	Theory	Difference.				
J. A. RICKEY, INSPECTOR											
	p.c.	p.c.		p.c.				p.c. of total Alcohol.			
0·8632	73·71	80·15	0·9342	42·67	84·3	83·9	+0·4	none		41279	Genuine.
0·8472	80·46	85·87	0·9118	52·77	92·4	92·1	+0·3	none		41280	"
JAS. HOGAN, INSPECTOR.											
1·1930	none	none								41170	Is not Liquor Picis Carbonis. See App. B.
1·1654	none	none								41171	" " " Sold as solution of coal tar.
H. J. DAGER, INSPECTOR.											
0·8953	60·13	67·81	0·9419	38·83	43·5	80·0	—36·5		86·1	41344	Is not Liq. Picis Carbonis. The fact of being made with methyl alcohol should be stated on the label. See App. C.
1·0211	none	none								41345	Is not Liquor Picis Carbonis. See App. D.
T. KIDD, INSPECTOR.											
0·8545	77·50	83·43	0·9242	47·27	42·8	88·0	—45·2		93·4	30695	Adulterated. Contains methyl alcohol. See App. E.
0·8632	73·71	80·15	0·9486	35·20	39·6	76·1	—36·5		90·6	30809	Is adulterated and not Liq. Picis Carbonis. The fact of being made with methyl alcohol should be stated on the label. See. App. F.
JNO. TALBOT, INSPECTOR.											
0·8707	70·56	77·39	0·9168	50·61	91·0	90·8	+0·2		none	35998	Genuine.
0·8379	84·12	88·79	0·9234	47·64	46·05	88·35	—42·3		86·7	35999	Adulterated. Contains methyl alcohol. See App. G.

BULLETIN No. 188—LIQUOR PICIS

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of the Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
						DISTRICT OF CALGARY—	
1909;							
Aug. 11..	Liq. Picis Carbonis (solution of coal tar).	35598	A. Archibald, Edmonton.	6 oz..	50	Wright & Co., Southwark, London, Eng.	....
" 11..	" " ..	35599	D. W. Macdonald, Edmonton.	6 " ..	50	Unknown	....
						DISTRICT OF VANCOUVER—	
July —..	Liq. Picis Carbonis (solution of coal tar).	37716	Wilson's Drug Store, Vancouver.	6 oz..	60	Vendor	.....
" —..	" ..	37717	Leslie G. Henderson, Vancouver.	6 oz..	1 50	W. V. Wright & Co., Southwark, London.	....

SESSIONAL PAPER No. 14

CARBONIS (SOLUTION OF COAL TAR).

Results of Analysis.											
Density of Sample.	Approximate Alcohol, p.c.		Examination for Methyl Alcohol.						No. of Sample.	Remarks, and Opinion of the Chief Analyst.
	Weight	Volume.	Density.	Alcohol by Weight.	Refraction.			Methyl Alcohol.		
					Found.	Theory	Difference.			
R. W. FLETCHER, INSPECTOR.										
	p.c.	p.c.		p.c.				p.c. of total Alcohol		
0·8876	63·43	70·93	0·9709	20·58	54·5	54·6	—0·1	none	35598	Genuine.
0·8567	76·58	82·65	0·9298	44·73	53·7	86·0	—32·3	69·3	35599	Adulterated. Contains methyl alcohol.
J. F. POWER, INSPECTOR.										
0·8558	76·96	82·97	0·9768	15·83	42·6	42·2	+0·4	none	37716	Genuine.
8853	64·43	71·86	0·9452	37·00	77·90	78·0	—0·1	none	37717	"

APPENDICES.

A.—Referring to sample 39536:—This sample was carefully checked, and the presence of methyl alcohol established. It would appear that the manufacturers were not aware that wood alcohol had been used in its preparation, and the small amount of methyl alcohol present may have been added through some oversight in manufacture. The vendors write, under date 4th October—'Our laboratory man still claims that he uses nothing but pure alcohol in the manufacture of Liq. Carbonis Detergens; but at the same time I have no doubt that your analysis is correct, and I will have what we have on hand, destroyed, and will see that our new lot contains nothing but pure grain alcohol.'

B.—In regard to sample 41170, the following letter of September 22, has been received from the vendors. 'Your advance notice *re* Liquor Picis Carbonis is duly to hand, and your observation noted. We have to thank you for the information. It is information to us. On inquiry we find that this preparation was taken over by this Company from their predecessors, Henry Skinner & Co. On further inquiry we are informed that this was made by Henry Skinner & Co., probably 15 years ago, before the preparation became official. What little we had in stock (less than a gallon) has been destroyed'.

C.—Sample 41344 was apparently tendered as Liquor Carbonis Detergens, and invoiced as Liquor Picis Carbonis, by our Inspector in a mistake. The vendor writes under date September 21:—'Your collector received sample from me as Liquor Carbonis Detergens, one of the not official preparations by E. B. Shuttleworth. This preparation is made from an old formula used before the British Pharmacopœia of 1898 made Liquor Picis Carbonis official. My assistant showed him original bottle, labelled Liquor Carbonis Detergens, and also showed him Squire's Companion to the B. P. which stated that it was not official. We understood he was taking it, as labelled, for he appeared to copy the label. He asked for Liquor Picis Carbonis, and we showed him that the preparation we had was not the official one'.

Our inspector's account of the transaction is as follows:—'The clerk serving me asked if Detergens was what I wanted. I said Liquor Picis Carbonis was what I wanted. He asked proprietor about it. Proprietor said it was all right, and the clerk then filled the bottle'. While it is true that Liquor Carbonis Detergens fills many of the requirements of Liquor Picis Carbonis, the preparations are not identical, and should not be dispensed as being so.

Regarding the presence of methyl alcohol in this preparation, the E. B. Shuttleworth Co. writes under date September 25:—'We are in receipt of your favour of the 24th instant, with inclosure of Inland Revenue Act, for which accept our thanks. This is the first intimation we have had, that preparations containing Methyl. Alcohol should be labelled as such, and we will immediately comply with that condition, although it will not affect us materially as we believe we have only one or two preparations in which we use it; this particular preparation (Liq. Carbonis Detergens) is used almost exclusively as a disinfectant'.

D.—In the matter of sample 41345, the vendors write, under date September 20:—'We should explain in fairness to the manufacturer whose name is attached to the container, that the title on the container is Liquor Carbonis Detergens. Our custom has been to treat 'Liquor Carbonis Detergens' and 'Liquor Picis Carbonis' as identically one and the same. From any information at hand, we have felt justified in this conclusion and in regard to the non-alcoholic adulteration, authorities state both contain alcohol'. Also under date September 25:—'Replying to yours dated 23rd instant, we presume we must accept responsibility for the article sold to Inspector Dager. We would however point out in justification of our custom, that in 1888 some

years previous to the adoption by B. P. revision committee of any formula for Liquor Picis Carbonis, we prepared a Liquor Carbonis Detergens as per inclosed formula, and as it is practically identical with the B. P. article and as the official formula was evidently intended for uses that had been given the Liquor Carbonis Detergens, we continued to prepare it by our method. Unfortunately however as the quantity used became very much reduced, we purchased the article instead of preparing it ourselves. We must accept responsibility, but contend that we acted conscientiously and in good faith."

E.—Regarding sample 30695, Mr. H. M. Myers of Stratford, makes a declaration, of date September 28, to the effect that the sample supplied by him as Liquor Picis Carbonis, was made by the E. B. Shuttleworth Co., of Toronto.

F.—In regard to sample 30809, Mr. Hovey writes as follows, under date September 20 :—'Received, your report to day stating the sample of Liq. Picis Carbonis obtained from me on July 29, contains wood alcohol. I find on looking over my old invoices that I procured a one pound bottle from Messrs J. Winer & Co., Hamilton, on July 8, 1908. It was from that bottle that I gave the sample to Mr. Kidd. The bottle I still have in stock. It is labelled "Liq Carbon. Detergens" J. W. & Co. label. There is also another label on bottom of bottle showing J. W. & Co., to be a branch of the National Drug & Chemical Company'.

G.—Regarding 35999, the vendor writes :—'Was made by us with Columbia Spirits No. 1, and to tell the truth we can see no reasonable objection to this, as Liq. Picis Carbonis is never used undiluted, but always in weak watery solutions. If this is harmful, how is it the hospitals use Columbia Spirits No. 1 for bathing purposes? We will be pleased to conform strictly to the B. P. process in future'.

APPENDIX J.

BULLETIN No. 189—CREAM.

OTTAWA, September 23, 1909.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I beg to hand you a report of work done upon 65 samples of so called cream purchased by our inspectors in 13 out of the 15 inspectoral districts of Canada.

This is the first time that a systematic collection of cream has been made, under the Adulteration Act. A collection of 367 milksamples, made in April, 1906, (Bulletin 121) includes 29 samples of cream, whose fat content ranged from 12·63 to 33·51 per cent with an average of 22·76 per cent.

In view of the desirability of fixing standards for milk and allied food substances, under Sec. 26 of the Adulteration Act, it is important to discover what the public expects to get, when it buys cream. The work now reported shows that the public is offered, and accepts as cream an article varying in butter fat (the characteristic and the valuable component of cream) from above 42 to 11·10 per cent. Whether or not the public is satisfied with this condition of things is another matter.

In order that the great variations of value in market cream may be clearly apprehended, I here arrange the 64 samples analysed of the present collection, in serial order of butter fat content.

No. 36784	42·66	above 40 %
41513	41·27	"
35972	40·12	"
No. 41157	39·90	above 30 %
36786	39·71	"
40277	36·57	"
36783	36·00	"
36785	31·21	"
41155	30·18	"
974	30·00	"
No. 41722	29·75	above 25 %
41511	29·72	"
41512	29·27	"
36772	28·93	"
39522	28·65	"
41339	28·57	"
39524	28·05	"
37695	27·89	"
971	27·23	"
41282	26·98	"
37692	26·91	"
39523	26·74	"
40276	26·50	"
41515	26·42	"
39521	25·98	"
41265	25·76	"
36773	25·49	"
No. 41156	24·93	above 20 %
41159	24·73	"
35970	24·46	"
36782	24·06	"
No. 35971	23·72	above 20 %
41158	23·61	"
41724	23·38	"
35583	22·92	"
31340	22·61	"
31342	22·40	"
40279	22·29	"
40278	22·22	"
37694	21·77	"
41514	21·62	"
41723	21·61	"
38560	21·22	"
41264	21·18	"
37693	20·40	"
41725	20·07	"
No. 41268	19·38	above 15 %
41721	19·01	"
41267	18·54	"
38559	18·31	"
35587	18·13	"
35586	17·60	"
41343	17·36	"
39525	17·00	"
970	16·91	"
35585	16·24	"
35974	16·06	"
35584	16·06	"
38557	15·92	"
38558	15·83	"
40280	15·37	"
38556	11·77	above 10 %
41341	11·42	"
35973	11·10	"

In Bulletin 121, the late Chief Analyst suggests standards for cream as follows:—
Whipping cream, not less than 25 per cent. butter fat.
Table " " " 17·5 " " "

My impression is that it would be unwise to attempt the establishment of standards for different grades of cream. The time may come when legal standards of quality recognizing different grades within the species, may be justified; but, for the present, I think that the requirements of the Act, are met by the establishment of specific identity. If an article sold as wine, or coffee, or vinegar, &c., corresponds to the definitions respectively of wine, coffee and vinegar, the subordinate questions of value, from the point of view of the connoisseur, must be left to be dealt with by the purchaser himself. When the public asks for cream, it must get cream. The particular grade of cream is a matter to be settled between the buyer and seller. This leaves us face to face with the question, what is cream?

Some may say 'cream' begins where 'milk' ends. An extra rich milk may be regarded as a poor cream. This would seem to be the position taken by some vendors, because, although a milk containing 11 per cent of butter fat is quite exceptional, it is not unknown. (See Nos. 24, 65, 515, 517, 28644, &c, of Bull. 121). Were such a contention to be seriously considered, it would still be necessary to fix a minimum for fat in the article. The present report shows that only 3 samples out of 64 sold as cream, contain less than 15 per cent of fat. Twenty-nine samples reported in Bulletin 121, show an average of 22·76 per cent fat, with only one sample below 16 per cent. On the other hand, 75 per cent of these two collections (totalling 93 samples), show more than 20 per cent of butter fat in the article sold as cream.

The standard for cream established by the United States Department of Agriculture, (Circular 19, of June 26, 1906), is 18 per cent fat. Several States of the American Union have established independent standards, and these range from 15 to 30 per cent for cream. Great Britain has no legal standard for cream; but the following passage from a recent report to the Local Government Board (Food Report, No. 10. 1909) gives an idea of what is considered to be cream in England.

'None of the creameries which I visited (with two exceptions in the north of England to which reference will be made later) supplied cream containing less than 40 per cent of butter fat. In most cases the cream contained well above this quantity; about 50 per cent being a usual amount. Samples from two creameries showed on analysis as much as 59 per cent of fat. In general a somewhat higher fat content was observed in cream supplied by the firms visited in the south of England than in the north.'

It is my belief that no injustice will be done to the dealer, and that a much needed protection will be afforded to the consumer, if the following definition of cream be made legal:—

1. Cream is that portion of milk, rich in milk fat, which rises to the surface of milk on standing, or is separated from it by centrifugal force; is fresh and clean, and contains not less than eighteen (18) per cent of milk fat.

2. When guaranteed to contain a higher percentage of milk fat than eighteen (18) per cent, it must conform to such guarantee.

3. Cream must be entirely free from gelatine, sucrate of lime, gums, or other substances added with a view to give density, consistency or apparent thickness to the article.

4. Cream must contain no preservatives of any kind; nor any colouring matter, other than is natural to milk.

5. Evaporated cream, clotted cream, condensed cream, or any other preparation purporting to be a cream, (except ice cream), must conform to the definition of cream as given above, and must contain at least twenty-five (25) per cent of milk fat.

It is pretty well known that a number of articles called *Cream thickeners* are on the market. These are intended to be added to cream for the purpose of giving it an appearance of greater density and richness than it really possesses. Gelatine is a constituent of most of them; but calcium sucrate (Sucrate of lime) gum tragacanth and

other substances are often present. Some of the cream samples of this collection were examined for 'thickeners', and evidence of gelatine was quite definitely found in 4 samples; while reactions sufficiently clear to justify a declaration of *trace of gelatine* were obtained with 9 other samples.

Evidently the cream producers of Canada are not above suspicion of employing these entirely dishonourable methods of giving a fraudulent appearance of richness to the article. This mode of fraud is particularly harmful in cases where a Dairy Company, counts among its patrons, a few who are guilty of the use of thickeners. It may be the aim of such company to supply honest cream; but, by intermixing ignorantly, a few gallons of the sophisticated article, a whole day's output may be contaminated. Of course, in such case, the company must be held responsible, should adulteration be detected. It is quite true that the guilty patron of such a company could not possibly reap any advantage to himself, provided that his cream was sold on its fat content; but agents interested in the sale of these 'cream thickeners', have been known to so misrepresent them, as to lead the purchaser to believe that his cream was actually improved by their use. The only safeguard which a Dairy Company can have, is the periodical testing of its cream for these thickeners.

On our next collection of cream, I shall see that a systematic examination for cream thickeners is made.

I beg to recommend the publication of this report as Bulletin No. 189.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

BULLETIN No. 189—CREAM.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Price.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. — (Is not an expression of opinion.)	Results of Analysis. Total Solids, p.c	Fat, p.c.	Solids not Fat, p.c.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR.												
1909.					$ c.							
Aug. 12....	Cream.	41721	Acadia Dairy Co., Wolfville, N. S.	1 qt....	0 25	W. W. Pineo, Waterville, N.S.		26·61	19·01	7·60	41721	*See* prefatory letter.
" 17 ...	"	41722	Scotia Pure Milk Co., Halifax, N.S.	1½ pts ..	0 30	Unknown		36·67	29·75	6·92	41722	
" 18....	"	41723	I. S. Higgins, Halifax, N.S.	" ...	0 25	Wm. Moore, Shubenacadie, N.S.		28·85	21·61	7·24	41723	
" 18...	"	41724	A. D. Johnson, Halifax, N.S.	" ...	0 23	G. Brenton, Stewiacke, N.S.		30·79	23·38	7·41	41724	
" 18 ...	"	41725	" "	" ...	0 23	A. G. Horne, Enfield, N.S.		27·52	20·07	7·45	41725	
DISTRICT OF PRINCE EDWARD ISLAND—THEO. MOORE, INSPECTOR.												
July 23....	Cream.....	38556	Mrs. Douglas Smith, Rustico Road.	1½ pts ..	0 12	Vendor.....		20·18	11·77	8·41	38556	*See* prefatory letter.
" 23....	"	38557	Mrs. J. Mallett, Royalty Charlottetown.	" ...	0 15	"		23·05	15·92	7·13	38557	
" 23 ...	"	38558	W. S. Bowman, Royalty Charlottetown.	" ...	0 15	"		23·24	15·83	7·41	38558	
" 23....	"	38559	Mrs. J. P. Wood, Alexandria.	" ...	0 15	"		25·82	18·31	7·51	38559	
" 23....	"	38560	Mrs. E. K. Scott, North River.	" ...	0 15	"		28·77	21·22	7·55	38560	

DISTRICT OF NEW BRUNSWICK—J. C. FERGUSON, INSPECTOR.

July	26....	Cream.... ...	39521	Maritime Dairy Co., St. John, N.B.	1 qt....	0 30	Maritime Dairy Co., Sussex, N.B.	.....	32·68	25·98	6·70	39521
"	26....	"	39522	St. John Creamery Co., St. John, N.B.	"	0 30	Several Farmers		35·84	28·65	7·19	39522
Aug.	7....	"	39523	C. J. Bodkin, Fredericton, N.B.	"	0 30	"		33·57	26·74	6·83	39523
"	17....	"	39524	Maritime Dairy Co., Ltd., Sussex, N.B.	"	0 25	"		34·85	28·05	6·80	39524
"	18....	"	39525	G. O. Stratton, Moncton, N.B.	"	0 30	Moncton Pasteurized Milk Co., Sunny Brae, N.B.	.....	24·46	17 00	7·46	39525

DISTRICT OF QUEBEC—E. BELAND, INSPECTOR.

July	16....	Cream.....	36782	Joseph Maillhout, Beauport.	1½ pts ..	0 20	Vendor.....	.....	30·80	24·06	6·74	36782
"	16....	"	36783	Mad. Grenier, " ..	" ...	0 20	"	... .	42·05	36·00	6·05	36783
"	16....	"	36784	Joseph Parent, " ..	" ...	0 20	"	..... .	49·20	42·66	6·54	36784
"	16....	"	36785	Francis Bedard, " ..	" ...	0 20	"	.....	37·57	31·21	6 36	36785
"	16....	"	36786	Veuve Compana, " ..	" ...	0 20	"	.....	45·84	39·71	6·13	36786

DISTRICT OF ST. HYACINTHE—J. C. ROULEAU, INSPECTOR.

						$ c.						
July	20....	Cream.....	970	W. J. Gobeil, Farnham...	1 qt. ..	0 20	Vendor	26 per cent..	24·43	16·91	7·52	970
"	23....	"	971	A. Mathieu, Victoriaville .	" ...	0 30	"	.....	33·83	27·23	6·60	971
"	21 ...	"	972	H. Peltier, Rapid Plat, St. Hyacinthe.	"	0 25	"	.....	36·07	28·93	7·14	972
"	21....	"	973	B. Lemieux, Ravy St. Francois, St. Hyacinthe. . .	"	0 25	"	.....	33·01	25·49	7·52	973
"	21....	"	974	Frs. Belanger, Rapid Plat, St. Hyacinthe.	"	0 25	"	.....	36·58	30·00	6·58	974

DISTRICT OF MONTREAL—J. J. COSTIGAN, INSPECTOR.

July	21 ...	Cream....	40276	Standard Dairy Co., Montreal.	1 qt ..	0 30	E. L. Magne, Warden, P.Q.	.....	33·54	26·50	7·04	40276
"	23....	"	40277	G. Jubinville, 90 Roy St., Montreal.	"	0 40	Unknown	.....	42·80	36·57	6·23	40277
"	23 ...	"	40278	Romeo Bernard, 91 Lagauchetiere St. E., Montreal.	" ...	0 30	Montreal Dairy Co.. ..	.....	29·20	22·22	6·98	40278
"	23....	"	40279	P. Brunet, 159 Lagauchetiere St. E., Montreal.	" ..	0 30	....	.....	29·35	22·29	7·06	40279
"	23....	"	40280	Mrs. Pelletier, 645 Demontigny St. E., Montreal.	"	0 24	Montreal Dairy.....	.....	23·19	15·37	7·82	40280

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Price.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis. Total Solids. p.c.	Fat. p.c.	Solids not Fat. p.c.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR.												
1909.												
Aug. 20....	Cream.....	41264	The Ottawa Dairy Co., Ltd., Ottawa.	1 qt....	0 40	Vendors.....	16 per cent..	28·55	21·18	7·37	41264	
" 20....	"	41265	The Ottawa Dairy Co., Ltd., Ottawa.	"	0 50	"	24 " ..	32·84	25·78	7·06	41265	
" 20....	"	41267	The Alderney Dairy Co., Ottawa.	"	0 40	Experimental Farm. Ottawa.	.....	26·35	18·54	7·81	41267	
" 23 ...	"	41268	R. Allen, Ottawa.....	"	0 30	Vendor.....	.....	27·00	19·38	7·62	41268	
" 25....	"	41282	P. Clarke, Deschenes, P.Q.	"	0 50	"	25 per cent..	33·98	26·98	7·00	41282	
DISTRICT OF KINGSTON—JAS. HOGAN, INSPECTOR.												
Aug. 4....	Cream.....	41155	Kirk & Lee, Kingston.	1 qt ..	0 25	Vendors.....	.....	37·06	30·18	6·88	41155	
" 4 ...	"	41156	T. F. Auld, "	"	0 40	Vendor	.....	32·33	24·93	7·40	41156	
" 4....	"	41157	Kirk & Lee, "	" ...	0 40	Vendors	.....	46·16	39·90	6·26	41157	
" 4....	"	41158	J. Knight, "	"	0 30	Vendor	.....	31·22	23·61	7·61	41158	
" 4....	"	41159	G. Masoud, "	"	0 40	A. Gibbony	.....	32·32	24·73	7·59	41159	
DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.												
Aug. 11...	Cream.....	41339	Hamilton Dairy and Cream Co., Hamilton.	1 qt....	0 25	Vendors.....	24 per cent..	35·27	28·57	6·70	41339	
" 11....	"	41340	The Coverdale Creamery Co., Hamilton.	" ...	0 35	"	.....	29·90	22·61	7·29	41340	
" 17....	"	41341	John Tingle, 314 Gerrard St. E., Toronto.	"	0 25	Vendor.	18 per cent..	19·02	11·42	7·60	41341	
" 17....	"	41342	J. V. Moore, 199 Wilton Ave., Toronto.	" ...	0 40	"	.....	30·07	22·40	7·67	41342	
" 17. ..	"	41343	H. Taylor, 235 Church St., Toronto.	"	0 40	"	.....	25·18	17·36	7·82	41343	

DISTRICT OF WINDSOR—JNO. TALBOT, INSPECTOR.

July 21	Cream	35970	Geo. Peters, London	1 qt	50	Geo. Barker, London Tp.		30·60	24·46	6·14	35970
" 21	"	35971	J. Fawkes, London	"	30	W. Sloan, "		30·76	23·72	7·04	35971
" 21	"	35972	J. W. Griffiths, London	"	35	Vendor		46·24	40·12	6·12	35972
" 21	"	35973	G. W. Kent, London	"	30	Saul Crumlin		18·68	11·10	7·58	35973
" 21	"	35974	J. D. Ross, London	"	20	Vendor		23·84	16·06	7·78	35974

DISTRICT OF CALGARY—R. W. FLETCHER, INSPECTOR.

July 30	Cream	35583	Nicholls & Shepherd, Calgary.	1 qt	0 40	Vendors		30·58	22·92	7·66	35583
" 30	"	35584	Bud Pallesen, Calgary	"	0 40	Vendor		24·46	16·06	8·40	35584
" 30	"	35585	T. Laycock & Co., Calgary	"	0 40	Vendors		24·31	16·24	8·07	35585
" 30	"	35586	W. Miller, Calgary	"	0 40	Vendor		25·68	17·60	8·08	35586
" 30	"	35587	Sadler & Gordon, Calgary	"	0 40	Vendors		26·33	18·13	8·20	35587

DISTRICT OF VANCOUVER—JNO. F. POWER, INSPECTOR.

July 23	Cream	37691	City Dairy, Vancouver	30 oz.	0 45	Vendor		*			37691
" 23	"	37692	Richmond Dairy, "	"	0 50	"		33·38	26·91	6·47	37692
" 23	"	37693	F. Scott, "	"	0 50	Richmond Dairy, Vancouver.		27·43	20·40	7·03	37693
" 23	"	37694	Crystal Dairy, "	"	0 50	Vendor		28·82	21·77	7·05	37694
" 24	"	37695	Crown Dairy, "	"	0 40	"		34·41	27·89	6·52	37695

DISTRICT OF VICTORIA—D. O'SULLIVAN, INSPECTOR.

July 30	Cream	41511	City Dairy, Victoria	1 qt	0 40	B. C. Milk Condensing Co., New Westminster		36·60	29·72	6·88	41511
" 30	"	41512	Royal Dairy, "	"	0 30			36·24	29·27	6·97	41512
" 31	"	41513	Victoria Creamery Assn., Victoria.	"	0 50			47·22	41·27	5·95	41513
Aug. 5	"	41514	Windsor Grocery Co., Victoria.	"	0 60	Alfred Few, Victoria, B.C.		28·84	21·62	7·22	41514
" 6	"	41515	D. H. Ross & Co., Victoria.	"	0 60	E. Freeman, Victoria, B.C.		31·01	26·42	7·59	41515

* Sample broken in transit.

APPENDIX K.

BULLETIN No. 190—ICE CREAM.

OTTAWA, September 28, 1909.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I have the honour to hand you a report upon 140 samples purchased by our inspectors as Ice Cream. The inspection was made during the months of July and August, and all the inspectoral districts are represented except Manitoba.

One sample (No. 41701) from Nova Scotia was broken in carriage; and all the samples (10 in number) from Vancouver, arrived in spoiled condition. This was partly due to the extreme heat of summer, and the length of the journey, but in part also to the incomplete filling of bottles, which thus permitted of churning in transit. The samples from Victoria came in fairly good condition, in spite of the great distance.

Of 129 samples worked, the following summary of results in milk fat is interesting.

District.	Butter Fat, Percentage Above																		
	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2
Nova Scotia	1		1					1	2		3		1						
Prince Edward Island			1				1	1	2	2		1			2				
New Brunswick	1		3			1		1	1	1						1		1	
Quebec						2			1	1		1						3	2
St. Hyacinthe	2		1	1		1	1	1			1	1				1			
Montreal	3			2	2		1	2											
Ottawa	1					1	1		2		2		2		1				
Kingston	5	2					1	1	1										
Toronto		1	1	2		1		1	2	1				1					
London	2	1		2	1	1	1	1			1								
Windsor	1		1		2	2		2	1				1						
Calgary	1			2		2		1	2	2									
Victoria			1		1	2	1	1	3		1								
Total	17	4	9	9	6	13	7	13	17	7	8	3	4	1	3	2		4	2
	45					57					27								

It thus appears that 45 samples, or 35 per cent of the collection, contain above 15 per cent of milk fat; 57 samples, or 44 per cent of the collection, contain above 10 per cent of fat; while 27 samples, or 21 per cent of the collection contain not more than 10 per cent of fat.

The United States standard for milk fat in ice cream is 14 per cent, and appears to be a reasonable one so far as my investigation goes. Of the present collection, 65 samples or more than 50 per cent meet this standard. Of 80 samples reported in 1908, (See Bull. No. 162) 50 per cent reached the standard for fat just referred to.

I have recently (See Bull. 189) recommended a standard of 18 per cent for cream. The use of cream of this description, together with sugar and such other ingredients as may be permissible in ice cream, as flavours and stiffeners, will, I am given to understand, result in a product containing about 14 to 15 per cent of milk fat. Where fruit or nuts are used to give flavours, the fat content will be slightly reduced, and I think that, in ice cream of this character, it may be reasonable to require 12 per cent of milk fat. Such ice creams, as a condition of their securing the advantage of lowered fat content, should be sold as 'true fruit,' or as 'nut' ice creams.

In the absence of any legal definition of ice cream, it is impossible to designate any of the samples herein reported as adulterated, in regard to their fat content; but I have described those which contain not more than 10 per cent of fat, as of 'poor quality,' and those containing not more than 6 per cent fat as of 'very poor quality'; while numbers 39519, 36787, 36791, 36792, 36795 and 36796, which contain no more fat than is usually found in ordinary milk, are certainly not entitled to the name cream at all.

It is quite certain that the public expects ice cream to possess a flavour which may be given to it either by the actual addition of fruit or nuts, or cocoa, &c., or by the use of a fruit extract or essence, natural or artificial. So long as this flavour is not injurious to health, there can be no more objection to its employment in ice cream, than in candy or other food. When added as real fruit, the water contained in the fruit reduces the fat percentage in the finished article, and for this reason I have recommended that a minimum of 12 per cent fat be accepted for ice cream, acknowledged to be made with actual fruit, or with nuts.

The question of dyes in ice cream must be decided upon the same lines as are considered in dyed candies, preserves, &c. So long as the dye used is harmless to the health, in the proportions employed, there would seem to be no objection to its use. I am not yet in a position, to give a list of dye-stuffs, which can be authoritatively recommended for the purpose. Where true fruit, cocoa or nuts are employed as flavours, no dye stuff would seem to be needed. It is claimed that certain aniline colours are now obtainable of such high degree of purity as to make their use safe in foods. The subject is under investigation.

It was formerly usual for the purveyors of ice cream to manufacture the article themselves. At the present time it is quite a usual thing for ice cream to be sold many hundreds of miles from the place of its production. This is an innovation which is indubitably to the advantage of the public, since it permits the furnishing of a desirable article of food to persons living in localities where cream is scarce or unknown. Section 24 (a) of the Adulteration Act (R.S. 1906, Chap. 133) expressly provides that 'no food or drug shall be deemed adulterated, when any matter or ingredient, not injurious to health, has been added to the food or drug, in case such matter or ingredient is required for the production or preparation thereof, as an article of commerce, in a state fit for carriage or consumption, if the same has not been fraudulently added to such food or drug, for the purpose of increasing the bulk, weight or measure thereof, or to conceal its inferior quality, and each package, roll, parcel or vessel containing such article of food or drug, manufactured, sold or exposed for sale, is distinctly labelled as a mixture in conspicuous characters, forming an inseparable part of a general label thereon, bearing the name and address of the manufacturer.'

Shippers of ice cream find it advantageous, if not absolutely necessary, to add to the article a so-called 'thickener' or 'stiffener,' which is usually gelatine but may be gum tragacanth, or other gum or even gelatinized corn starch. If these thickeners, or certain of them, could be recognized as essential ingredients of ice cream, and incorporated into the definition of ice cream, as may properly enough be done with the sugar, fruit, cocoa or nuts added, there would be no need of placing the word 'mixture' or 'compound' on the label. It is claimed by manufacturers that a prejudice against all articles so declared exists to a degree which would seriously interfere with the sale of an ice cream branded as 'compound'; although the addition of the thickener is made strictly in the interest of the consumer. Purchasers of ice cream desire a firm article, and manufacturers assert that this demand cannot be met unless a thickener is added.

On the other hand, it is evident that, by the use of a thickener, an ice cream which is very poor in cream, may be made to appear much better than it really is. Such articles as contain less than 10 per cent of fat may find sale when very hard frozen or when stiffened with starch or gelatine, but could not bear transportation, or be sold to discriminating customers. It will be noted that most of the samples reported herein, which contain not more than 10 per cent of fat, contain at the same time, a thickener or stiffener, which in such cases has evidently been added to conceal defect, or to give an apparent value greater than the real value. At the same time it is noteworthy that out of 58 samples which have more than 14 per cent of fat, 25 samples contain stiffeners. And in this connection I may say that the number of samples containing stiffeners may be larger than is shown by the analytical results, since it is known that other substances than those which were looked for, are capable of acting as stiffeners, and may have been present without detection.

It is fair to urge that makers of ice cream containing true fruit, or nuts or cocoa, have no objection to naming these ingredients.

Thus we find fruit ice cream, nut ice cream, chocolate ice cream, regular articles of commerce. But nobody advertises gelatine ice cream, or corn-starch ice cream, or gum tragacanth ice cream, or stiffened ice cream. This seems to point to a general impression that gelatine and other thickeners, are foreign to true ice cream ; and are capable of being employed to the detriment of the purchaser.

It may be that the requirement of a minimum of 14 per cent of milk fat in ice cream, would justify the use of a stiffener as well. The stiffener could not be added to conceal defect if the required percentage of milk fat were also present. A very strict enforcement of the penalty for infringement of the Act, in the case of ice cream, would then be called for, since the public would be at the mercy of the manufacturer.

I beg to recommend the publication of this report as Bulletin No. 190.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of the Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. — (Is not an expression of opinion.)	Results of Analysis. Total Solids.	Fat.	Gelatine.	Starch.	No. of Sample.	Remarks, and Opinion of the Chief Analyst.
DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR.													
1909.								p.c.	p.c.				
Aug. 3..	Ice Cream.	*41701	N. W. Mason, New Glasgow, N.S.	1 qt..	40	Vendor						41701	
" 4..	" ..	41702	W. B. Murphy, Truro, N.S.	1 " ..	40	"	Vanilla	31·98	10·20			41702	Poor quality.
" 4..	" ..	41703	W. E. Bates, Truro, N.S.	1 " ..	50	"	Maple	38·32	18·90	present		41703	
" 10..	" ..	41704	Kandy Kitchen, Yarmouth, N.S.	1 " ..	60	"	Pine Apple	35·50	10·02		present	41704	Poor quality.
" 10..	" ..	41705	Jas. Rozee, Yarmouth, N.S.	1 " ..	60	"	Chocolate	34·64	10·84			41705	"
" 11..	" ..	41706	Mrs. Moore, Kentville, N.S.	1 " ..	40	"	Ginger	31·70	8·69			41706	"
" 17..	" ..	41707	Scotia Pure Milk Co., Halifax, N.S.	1 " ..	40	"	Vanilla	27·37	12 15	present		41707	
" 17..	" ..	41708	D. R. Ross, Halifax, N.S.	1 " ..	40	"	"	34·75	12 17			41708	
" 17..	" ..	41709	Wm. Patrick, Halifax, N.S.	1 " ..	50	"	Peach	34·01	13·58	present		41709	
" 18..	" ..	41710	F. W. Cookson, Halifax, N.S.	1 " ..	50	"	Vanilla	36·46	22·81			41710	
DISTRICT OF PRINCE EDWARD ISLAND—T. MOORE, INSPECTOR.													
July 21..	Ice Cream.	38546	A. Richey, Murray River.	1½ pt.	38	Vendor		29·43	14·20			38546	
" 21..	" ..	38547	Mrs. Jas. Vatcher, Charlottetown.	1½ " ..	35	"		22 86	6·24		present	38547	Very poor quality.

July	21.	Ice Cream.	38548	Mrs. W. F. Carter, Charlottetown.	1½	"	38	"			30·37	13·52			38548	
"	21.	"	38549	E. J. DesRoches, Charlottetown.	1½	"	38	"			31·18	18·86			38549	
"	21.	"	38550	Mills Bros., Charlottetown.	1½	"	38	"			27·86	12·63			38550	
"	21.	"	38551	J. J. Gaudet, Summerside.	1½	"	35	"			30·70	11·70			38551	
"	21.	"	38552	G. W. Warren, Summerside.	1½	"	35	"			37·56	12·93	present		38552	
"	21.	"	38553	J. H. Lock, Summerside.	1½	"	38	"			31·36	11·84			38553	
"	21.	"	38554	Mrs. C. A. Bent, Summerside.	1½	"	35	"			23·41	6·23	present		38554	Very poor quality.
"	21.	"	38555	F. S. Mason, Charlottetown.	1½	"	38	"			28·62	9·62			38555	Poor quality.

DISTRICT OF NEW BRUNSWICK—J. C. FERGUSON, INSPECTOR.

July	27.	Ice Cream.	39511	Sanford W. Scammell, St. John, N.B.	1 qt.		60	Vendor		Chocolate	35·77	18·62			39511	
"	27.	"	39512	A. J. Russell, St. John, N.B.	1 "		40	"		Strawberry	33·64	15·14			39512	
Aug.	5.	"	39513	C. Carrara, St. Stephen, N.B.	1 "		40	"		Vanilla	29·65	12·95		present	39513	
"	7.	"	39514	Lloyd W. Vanwart, Fredericton, N.B.	1 "		45	"		"	32·08	11·17	present		39514	
"	7.	"	†39515	E. S. Washington, Fredericton, N.B.	1 "		50	"		Strawberry	29·10	5·35			39515	Very poor quality.
"	10.	"	39516	R. E. Holyoke, Woodstock, N.B.	1 "		40	"		Chocolate	38·84	18·73			39516	
"	17.	"	‡39517	Daniel A. Vail, Sussex, N.B.	1 "		50	"		Strawberry	39·50	18·40			39517	
"	18.	"	39518	William McMullen, Moncton, N.B.	1 "		40	"		Vanilla	39·51	13·11		present	39518	
"	19.	"	§39519	A. C. Woods, Chatham, N.B.	1 "		50	"		Strawberry	25·42	3·32	present		39519	Is in no real sense a cream.
"	19.	"	39520	William Corbett, Newcastle, N.B.	1 "		50	Maritime Dairy Co., Ltd., Sussex, N.B.		Vanilla	39·31	22·81		trace	39520	

DISTRICT OF QUEBEC—E. BELAND, INSPECTOR.

July	16.	Ice Cream.	36787	A. Boucher, 366 St. Joseph St., Quebec.	1½	pt.	35	Jos. Julien, St. Joseph St., Quebec.			25·30	3·60			36787	Is in no real sense a cream.
	16.	"	36788	Jos. Vaillancourt, 358 St. Joseph St., Quebec.	1½	"	30	Carrier, Beaumont			34·20	9·30		present	36788	Poor quality.

* Both samples broken. †Contains a small amount of aniline dye. ‡Small amount of aniline dye present. §Contains aniline dye.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of the Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis. Total Solids.	Fat.	Gelatine.	Starch.	No. of Sample.	Remarks, and Opinion of the Chief Analyst.
DISTRICT OF QUEBEC—E. BELAND, INSPECTOR—*Con.*													
1909.								p.c.	p.c.				
July 16.	Ice Cream.	36789	W. A. Hamelin, 300 St. Joseph St., Quebec.	1½	30	Léger, Poires, Lévis		39·50	15·78			36789	
" 16.	"	36790	A. Dion, 280 St. Joseph St., Quebec.	1½	30	" "		32·40	15·57			36790	
" 16.	"	36791	W. Morissette, 669 St. Valier St., Quebec.	1½	30	Unknown		25·00	2·80			36791	Is in no real sense a cream.
" 16.	"	36792	F. Clement, 785 St. Valier St., Quebec.	1½	30	Bernier, Lévis		26·30	3·04			36792	" "
" 16.	"	36793	" "	1½	30	"		36·12	12·97			36793	
" 16.	"	36794	Ed. Boileau, 836 St. Valier St., Quebec.	1½	30	Carrier, Lévis		35·71	11·38			36794	
" 16.	"	36795	T. A. Tessier, 7 Kent St., Quebec.	1½	30	A. Caouette, St. Sauveur.		23·53	3·55			36795	Is in no real sense a cream.
" 16.	"	36796	E. Charland, 127 St. Thérèse St., Quebec.	1½	30	Falardeau, Lorette		28·66	2·66		present	36796	" "
DISTRICT OF ST. HYACINTHE—J. C. ROULEAU, INSPECTOR.													
July 19.	Ice Cream.	959	G. L. Leclair, Farnham.	1 qt.	50	Vendor		30·56	15·28			959	
" 20.	"	960	Louis Ezzo, St. Jean.	1 "	35	"		39·17	21·42		present	960	
" 21*.	"	961	A. A. Larochelle, Sorel	1 "	40	"		31·16	5·90	Small amount present.	"	961	Very poor quality.
" 21.	"	962	Andrew Gianontsos, Sorel.	1 "	35	"		36·77	18·83			962	
" 21.	"	963	Geo. Morel, Nicolet.	1 "	40	"		31·85	13·06	present	present	963	

"	22	"	..	964	A. Normandier, Victoriaville.	1	"	..	45	"	.....	.....	31·87	10·98	present	.....	964	Poor quality.
Aug.	2	"	..	965	J. A. Jarnelle, Richmond.	1	"	..	50	"	.....	Banana	36·78	20·63	.....	.....	965	
"	2	"	..	966	O. DesRochers, Windsor Mills.	1	"	..	40	"	.....	Vanilla	28·01	9·81	.....	.....	966	Poor quality.
"	5	"	..	967	G. B. Couture, Iberville.	1	"	..	60	"	.....	"	30·87	14·52	.....	.....	967	
"	6	"	..	968	O. Perron, St. Hyacinthe.	1	"	..	50	"	.....	"	39·83	17·40	.....	.....	968	

DISTRICT OF MONTREAL—J. J. COSTIGAN, INSPECTOR.

July	21	Ice Cream.		40266	G. N. Salhani, 1 Notre Dame E., Montreal.	1	qt		45	Vendor	.....	.....	34·28	16·91	.....	.....	40266	
"	21	"	..	40267	W. Love, 739 St. Lawrence B., Montreal.	1	"	..	50	"	.....	.....	36·42	17·00	.....	.....	40267	
"	21	"	..	40268	Standard Dairy Co., Lagauchitiere Street, Montreal.	1	"	..	50	Vendors	.....	.....	33·02	17·14	.....	.....	40268	
"	22	"	..	40269	N. Bontin, Valleyfield, P.Q.	1	"	..	10	Vendor	.....	.....	39·41	16·80	.....	.....	40269	
"	23	"	..	40270	G. Jubinville, 90 Roy St., Montreal.	1	"		40	"	.....	.....	38·18	20·55	.....	.....	40270	
"	26	"	..	40271	Jno. D. Duncan Co., Mountain St., Montreal.	1	"	..	60	Vendors	.....	.....	42·52	20·18	.....	present	40271	
"	26	"	..	40272	A. Boosamara, 2 Notre Dame E., Montreal.	1	"	..	50	Vendor	.....	Chocolate	34·77	13·23	.....	.....	40272	
"	26	"	..	40273	J. D. Howick, St. Lawrence B., Montreal.	1	"	..	40	"	.....	.....	34·80	14·25	.....	.....	40273	
"	26	"	..	40274	W. J. Scott, 248 St. Denis St., Montreal.	1	"	..	50	"	.....	.....	37·57	13·56	.....	.....	40274	
"	26	"	..	40275	Imperial Ice Cream Co., Ltd., Montreal.	1	"	..	40	Vendors	.....	.....	41·90	22·06	.....	.....	40275	

DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR.

Aug.	7	Ice Cream.		41254	L. Watson, Arnprior	1	qt	..	30	Vendor	.....	.....	34·42	8·15	.....	present	41254	Poor quality.
"	12	"	..	41255	C. E. Barnhart, Maxville.	1	"	..	50	"	.....	.....	36·50	20·58	.....	.....	41255	
"	13	"	..	41256	F. Rogers, Ottawa	1	"	..	50	"	.....	.....	34·27	10·52	.....	.....	41256	Poor quality.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of the Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. — (Is not an expression of opinion.)	Results of Analysis. Total Solids.	Fat.	Gelatine.	Starch.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
DISTRICT OF OTTAWA J. A. RICKEY, INSPECTOR.—*Con.*													
1909.								p.c.	p.c.				
Aug. 13..	Ice Cream.	41257	C. Maltezos, Ottawa...	1 qt..	50	Vendor		31·90	12·62	present		41257	
„ 13..	„ ..	41258	H. N. Anstiss, Ottawa.	1 „ ..	60	„		29·77	14·88	„		41258	
„ 14..	„ ..	41259	P. Conlin, Gananoque.	1 „ ..	60	„		39·23	15·60			41259	
„ 19..	„ ..	41260	E. A. Lisk, Eganville..	1 „ ..	50	„		29·45	6·36			41260	Very poor quality.
„ 20..	„ .	41261	J. H. Pettypiece, Ottawa.	1 „ ..	50	„		30·98	12·92			41261	
„ 20..	„ ..	*41262	T. D. Sayer, Aylmer Park.	1 „ ..	50	„		32·80	8·27		trace	41262	Poor quality.
„ 21..	„ .	41263	Jno. T. Scott, Almonte.	1 „ ..	40	„		32·15	10·30		„	41263	„
DISTRICT OF KINGSTON—JAS. HOGAN, INSPECTOR.													
Aug. 4..	Ice Cream.	41145	A. J. Rees, Kingston..	1 qt..	50	Vendor		39·65	19·15			41145	
„ 4..	„ ..	41146	J. Frasso, Kingston....	1 „ ..	40	„		36·86	12·91			41146	
„ 4..	„ ..	41147	J. Alkis, Kingston.....	1 „ ..	35	„		45·59	23·97			41147	
„ 4..	„ ..	41148	H. Turk, Kingston.. .	1 „ ..	40	„		31·12	20·28			41148	
„ 4..	„ ..	41149	H. F. Prices, Kingston.	1 „ ..	35	„		39·76	21·65			41149	
„ 4..	„ ..	41150	F. Hoag, Kingston....	1 „ ..	50	„		34·50	14·45			41150	

"	4..	"	..	41151	G. Masoud, Kingston..	1 " ..	40	"	.....	35·51	20·15	.....	.....	41151	
"	4..	"	..	41152	T. Sakellaris, Kingston.	1 " ..	50	"	.....	35·50	20 16	.....	.....	41152	
"	4..	"	..	41153	J. McLaughlin, Kingston.	1 " ..	50	"	.....	35·48	13·73	.....	.....	41153	
"	4..	"	..	41154	J. E. Chown, Kingston.	1 " ..	50	"	.....	38·13	19·92	.....	.....	41154	
DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.															
Aug.	3..	Ice Cream.		41309	A. D. Smith, St. Catharines.	1½ pts.	20	Vendor	.....	33·36	15·92	.....	.....	41309	
"	3 .	"	..	41310	Lowell E. A. Jeans, St. Catharines.	1½ " .	20	"	.....	37·23	17·72	present	.....	41310	
"	4..	"	..	†41311	Wm. Norwich, Niagara Falls.	1 qt..	40	"	Strawberry .	34·01	12·90	.....	present	41311	
"	4..	"	..	41312	H. W. Pew, Niagara Falls.	1½ pts.	30	Gay Bros., Niagara Falls.	.....	32·74	12·05	.....	.....	41312	
"	11 .	"	..	†41313	J. H. Assem, Hamilton.	1½ " .	25	Vendor	Strawberry .	33·02	11 44	Large amount present	.....	41313	
"	11..	"	..	41314	Jas. Crawford, Hamilton.	1½ " .	25	"	" ...	39 18	17·13	.....	present	41314	
"	16..	"	..	41315	Devonshire Mfg. Co., Toronto.	1½ " .	30	Vendors.....	" ..	23·85	7·83	present	.....	41315	Poor quality.
"	16..	"	..	41316	The Harry Webb Co., Ltd., Toronto.	1½ " .	38	"	" ..	44·73	19·05	.....	.....	41316	
"	16..	"	..	41317	The Patterson Candy Co., Toronto.	1½ " .	40	"	.....	35·09	13·77	present	.....	41317	
"	16..	"	..	‡41318	The Maple Farm Dairy, Toronto.	1½ " .	15	"	Strawberry .	39·44	18·26	.....	.. ....	41318	
DISTRICT OF LONDON—T. KIDD, INSPECTOR.															
July	22..	Ice Cream.		30687	Yates & Thomas, Guelph.	1½ pts.	60	Vendors.....	.....	35·41	13·57	present	.... ..	30687	
"	22..	"	..	30688	Kallop & Spelos, Guelph.	1½ " .	65	"	.....	33·03	14·15	"	....	30688	
"	23..	"	.	30696	Chas. Gough, Stratford.	1½ " .	60	Vendor	.....	36·30	19 29	.....	present	30696	
"	23..	"	..	30697	W. R. Raffery, Stratford.	1½ " .	60	"	.....	33·61	17·80	.....	.....	30697	
"	26..	"	..	30803	J. J. Edward, Goderich.	1 pt..	25	"	.....	35·24	20 96	.....	.....	30803	
"	26..	"	..	30804	Harry Edward, Goderich.	1 " ..	30	"	.....	33·98	17 55	.....	.....	30804	

*Strongly dyed with aniline dye. †Contains small amount of aniline dye. ‡Small amount of aniline dye present.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of the Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis. Total Solids.	Fat.	Gelatine.	Starch.	No. of Sample.	Remarks, and opinion of the Chief Analyst.
DISTRICT OF LONDON—T. KIDD, INSPECTOR. *Con.*													
1909.								p.c.	p.c.				
July 27..	Ice Cream	30806	Oscar Neill, Seaforth...	1½ pts.	60	Vendor.....		39·72	23·37	present	.....	30806	
" 27..	" ..	30807	Chas. Aberhart, Seaforth.	1½ "	60	"		38·96	16·25	.....	.....	30807	
" 29..	" ..	30814	W. W. Nimens, Clinton	1½ "	60	"		32·84	10·12	Large amount present	.....	30814	Poor quality.
" 29..	" ..	30815	H. Bartleff, Clinton....	1½ "	60	"		34·67	15·26	.....	present	30815	
DISTRICT OF WINDSOR JNO. TALBOT, INSPECTOR.													
July 16.	Ice Cream	35960	Geo. Spearn, London..	1 qt.	40	Geo. Spearn, 188 Hamilton Road, London.	.....	35·21	8·24	.....	present	35960	Poor quality
" 16..	" ..	35961	Robt. Gilmore, " .	1 " ..	40	Olympia Ice Cream Co., London.	.....	36·13	13·36	.....	"	35961	
" 16..	" ..	35962	R. W. Burrell, " ..	1 " ..	40	" "	.....	38·38	13·00	.....	"	35962	
" 20..	" ..	35963	P. L. R. Scott, Port Stanley.	1 " .	50	Vendor.	.....	36·15	15·30	.....	trace	35963	
" 20..	" ..	35964	Alph. Hall, " ..	1 " .	50	"	.....	30·11	18·20	present	.....	35964	
" 20..	" ..	35965	C. Meyers, " ..	1 " ..	25	City Creamery, London.	.....	32·00	16·11	.....	.....	35965	
" 20..	" ..	35966	R. C. Herrick, " ..	1 " ..	35	Vendor.	.....	31·93	15·65	.....	.....	35966	
" 20..	" ..	35967	E. Jessop, " ..	1 " ..	40	R. H. Beattie, St Thomas.	.....	31·96	16·65	.....	.....	35967	
" 20..	" .	35968	W. T. Bell, Port Stanley Beach.	1 " ..	40	Vendor.....	.....	43·95	24·68	present	.....	35968	
" 20..	" ..	35969	T. Bowlby, Port Stanley.	1 " .	35	Sair & Balkwill, St. Thomas.	.....	28·71	12·54	.....	trace	35969	

DISTRICT OF CALGARY—R. W. FLETCHER, INSPECTOR.

July	28	Ice Cream	28989	F. Rochon, Calgary.	1	qt.	50	Vendor			38·95	11·75	present		28989
"	28	"	28990	Oliver & Dewer, "	1	"	50	Vendors			31·77	12·22			28990
"	28	"	28991	H. J. Hurd, "	1	"	60	Vendor			33·68	15·38			28991
"	28	"	28992	Mrs. Stirrett, "	1	"	60	"			32·70	17·55			28992
"	29	"	28993	S. E. Morrow, "	1	"	60	H. J. Hurd, Calgary			42·75	21·64			28993
"	29	"	28994	Mrs. Gill, "	1	"	60	" "			38·34	17·10			28994
"	29	"	28995	Mrs. Phillips, "	1	"	60	F. Rochon, Calgary			39·82	11·59			28995
"	29	"	28996	C. Andrews, "	1	"	60	H. J. Hurd, "			36·40	15·08			28996
"	29	"	28997	Oliver & Dewer, "	1	"	60	Vendors			31·46	12·47			28997
"	29	"	†28998	O. N. Bott, "	1	"	60	Vendor			32·60	13·81			28998

DISTRICT OF VANCOUVER—J. F. POWER, INSPECTOR.

July	27	Ice Cream	37706	New Westminster Creamery, New Westminster.	1	qt.	50	Vendors	Vanilla						37706
"	27	"	37707	Innes & Reid, "	1	"	50	"	"						37707
"	27	"	37708	Frisco Candy Co., Vancouver.	1	"	50	"	"						37708
"	28	"	37709	Crescent Creamery, Vancouver.	1	"	50	"	"						37709
"	29	"	37710	Almonds Dairy, Vancouver.	1	"	50	Vendor	"						37710
"	29	"	37711	J. Fronchalk, Vancouver.	1	"	50	"	"						37711
"	29	"	37712	S. Del, Vancouver.	1	"	60	"	Chocolate						37712
"	29	"	37713	Royal Candy Co., Vancouver.	1	"	1 30	Vendors	Vanilla						37713
"	30	"	37714	Athens Candy Co., Vancouver.	1	"	60	"	"						37714
"	30	"	37715	S. Demetry, Vancouver.	1	"	50	Vendor	"						37715

None of the samples from Vancouver were received in good condition. The extreme heat of summer, and the long distance, are chiefly responsible for this; but it is to some extent due to incomplete filling of containers.

†Sample badly churned.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of the Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis. Total Solids.	Fat.	Gelatine.	Starch.	No. of Sample.	Remarks, and opinion of the Chief Analyst.
DISTRICT OF VICTORIA—D. O'SULLIVAN, INSPECTOR.													
1909.								p.c.	p.c.				
July 27	Ice Cream	41501	H. A. Lilley, Victoria, B.C.	1 qt.	40	Vendor		32·23	12·55			41501	
" 27	"	41502	G. H. Keays, Victoria, B.C.	1 "	50	Royal Dairy		34·52	14·60			41502	
" 27	"	41503	F. Vaselatos, Victoria, B.C.	1 "	50	Vict. Creamery Assn.		33·25	15·15		present	41503	
" 28	"	41504	A. Bancroft, Victoria, B.C.	1 "	50	Vendor		36·30	18·37		"	41504	
" 28	"	41505	V. Stramalares, Victoria, B.C.	1 "	25	"		22·34	10·78	present		41505	Poor quality.
" 28	"	41506	Harcup & Antipas, Victoria, B.C.	1 "	50	Vendors		39·97	15·58	"		41506	
" 30	"	41507	City Dairy, Victoria, B.C.	1 "	25	B. C. Milk Condensing Co., New Westminster		34·32	12·78	"		41507	
" 30	"	41508	Royal Dairy, Victoria, B.C.	1 "	25	Vendor		33·28	13·55			41508	
" 30	"	41509	Victoria Creamery Assn, Victoria, B.C.	1 "	50	Vendors		36·38	16·61		present	41509	
Aug. 9	"	41510	W. S. Terry, Victoria, B.C.	1 "	25	Vendor		32·31	12·07	present		41510	

APPENDIX L.

BULLETIN No. 191—BRAN, SHORTS, CHOP-FEED.

OTTAWA, November 2, 1909.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I have the honour to submit herewith the results of analysis of 545 samples of bran, shorts and chop feeds, collected throughout Canada, in April, May and June of this year.

These are classified as follows :—

Bran	148	samples	(See Table II)
Shorts and Middlings	258	"	(See Table III)
Chop-Feeds	135	"	(See Table IV)
Exceptional	4		
Total	545		

This collection has special reference to the requirements of the Commercial Feeding Stuffs Act, of this year. Under the Act mentioned, which becomes operative with the beginning of the new year (January 1st, 1910), it is obligatory upon manufacturers of Feeding Stuffs, with certain exceptions, to place them on sale with a definite guarantee of their value in protein and fat, and to specify the maximum amount of crude fibre they contain.

Exceptions are made in the following cases : Hay and straw, roots, grains ground or unground either from a single species or mixed species ; wet brewers grains, bran or middlings.

The reasons for these exceptions will appear on consideration of the facts that, in the cases of hay, straw and roots, the purchaser is competent to judge the value of what is offered to him. Wet brewers grains are assumed to be fairly definite in value, and on account of their low value, to be little liable to adulteration. Bran and middlings (shorts) are definable under Section 26 of the Adulteration Act. Whole grains of mixed or unmixed species, and ground or unground, may be designated as chop-feed or moulée and on this assumption, may be defined under Section 26 of the Adulteration Act.

Since bran, shorts, (middlings) and chop-feed are feeding stuffs, which may be sold without registration or guarantee, it is necessary that bran, shorts and chop-feed should be defined in terms of protein, fat and fibre, in order that the purchaser may be legally protected under Section 26 of the Adulteration of Food Act.

This was the position taken by me in June, 1908, when the Feeding Stuffs Act was in contemplation, and it is clearly stated in Bulletin No. 156. I was less assured as regards chop feeds, than regarding bran and shorts; (See Bulletin 156, p. 6), and am still in doubt as to the possibility of defining this term so as to be quite fair to the manufacturer, and at the same time to give efficient protection to the purchaser. I am convinced that manufacturers of high grade chop-feeds will find it to their advantage to state, on the package, the value of their product, in protein and fat, and fibre, just as in the case of mixed feeds, where such statement is required by law.

My justification for this contention will be found in a study of Table IV. It will be seen that, for 135 samples sold as chop-feeds, the extreme and mean values are :—

	Maximum.	Minimum.	Mean.
Moisture	13·92	3·05	10·38
Fat	11·75	0·87	3·09
Proteids	16·19	6·63	10·70
Crude Fibre	25·80	1·21	8·69
Ash	7·64	1·04	3·24
Carbohydrates	74·59	47·89	64·45

Considering alone the three components, proteids, fat and fibre, upon which the value of the food, as defined under the Act (Sec. 2, e) is judged, we find the variations so large as to make it difficult, if not impossible, to say what should constitute a typical chop feed. The proteids may apparently vary from 16·19 per cent to 6·63 per cent the fat from 11·75 per cent to 0·87 per cent the crude fibre from 1·21 per cent to 25·80 per cent.

Great variation was found in 28 samples of chop-feeds, reported in Bulletin 156 (p. 7). The mean results upon both inspections, may be presented thus :—

Mean results for chop-feed in—

	Protein.	Fat.	Fibre.
28 samples (Bull. 156).....	11·44	2·79	7·80
135 " (Bull, 191).....	10·70	3·09	8·69

I would respectfully recommend that the following limits be made legal for chop-feeds, under the condition named.

When chop-feed is sold or offered for sale without a registration number, and without a special guarantee from the manufacturer or agent, it must contain not less than 10 per cent of proteids, and not less than 2 per cent of fat, and not more than 10 per cent of crude fibre.

It is however strongly recommended to manufacturers of chop-feeds, i.e., feeds made from mixed or unmixed grains, ground or unground, that they register such feeds, and sell them under a definite guarantee.

Bran.—In table II will be found the results of analysis of 148 samples purchased as Bran. The extreme and mean results of their examination are as follows :—

	Maximum.	Minimum.	Mean.
Moisture	13·37	7·90	10·69
Fat	9·52	1·42	3·92
Proteids	17·56	11·81	14·67
Crude Fibre	13·20	3 96	9·26
Ash	7·16	3·16	5·53
Carbohydrates	64·25	50·06	56 01

The analysis of 27 samples of bran (reported in Bulletin 156) in June, 1908, gave very similar results.

The mean findings for protein, fat and fibre are as below :—

MEAN RESULTS FOR BRAN.

	Protein.	Fat.	Fibre.
27 samples (Bull. 156)	14·74	3·48	8·69
148 " (Bull. 191)	14·67	3·92	9·26

The following limits for bran are recommended : —

When bran is offered for sale without a registration number, and without a special guarantee from the manufacturer or agent, it must contain not less than 14 per cent of proteids, and not less than 3 per cent of fat, and not more than 10 per cent of crude fibre.

SHORTS OR MIDDLINGS.

It has been found impracticable to distinguish between these terms ; and for purposes of trade they appear to be synonymous, at least so far as stock feeds are concerned. In table III will be found the results of analysis of 258 samples purchased as shorts or middlings ; chiefly under the former name, which is that more commonly used, so far as I can learn. The findings may be thus summarized :—

	Maximum.	Minimum.	Mean.
Moisture	13 56	6·45	10·54
Fat	6·88	0·95	4·04
Proteids	18·93	10 00	15 25
Crude Fibre	12·15	0·22	5·63
Ash	5·74	0·88	3·63
Carbohydrates	74·18	51 04	60·55

Bulletin 156 contains the results of analysis of 36 samples purchased as shorts or middlings. The mean values are as follows :—

SHORTS OR MIDDLINGS.

	Proteids.	Fat.	Fibre.
36 samples (Bull. 156)	16·37	4·00	7·75
258 " (Bull. 191)	15·25	4 04	5·63

The following limits for shorts or middlings as stock feed are recommended:—

When shorts or middlings is offered for sale without a registration number, and without a special guarantee from the manufacturer or agent, it must contain not less than 15 per cent protein, nor less than 4 per cent of fat, nor more than 8 per cent of crude fibre.

Four samples, which do not fall into either class of feed stuff herein considered, were collected in mistake, and are not further referred to in this report.

For the guidance of those interested the Commercial Feeding Stuffs Act is printed as an appendix to the present report.

I beg to recommend the publication of this report as Bulletin 191.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

8-9 EDWARD VII.

CHAP. 15.

An Act respecting Commercial Feeding Stuffs.

[*Assented to 19th May, 1909.*]

HIS Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:—

Short title.

1. This Act may be cited as *The Commercial Feeding Stuffs Act, 1909.*

Definitions.

2. In this Act, unless the context otherwise requires,—

"Minister."

(*a*) "Minister" means the Minister of Inland Revenue;

"Commercial feeding stuff."

(*b*) "commercial feeding stuff," "feeding stuff" and "feed" mean any article offered for sale for the feeding of domestic animals, and feeds claimed to possess medicinal as well as nutritive properties, excepting only hay and straw, roots, the whole seeds or the mixed or unmixed meals made directly from the entire grains of wheat, rye, barley, oats, Indian corn, buckwheat or flax seed; wet brewers' grains; the bran or middlings from either wheat, rye, oats, peas or buckwheat sold separately and not mixed with other substances;

"Registration number."

(*c*) "registration number" means the specific number given by the Minister, under this Act, to each brand of commercial feeding stuff;

"Agent."

(*d*) "agent" means any person whose name has been filed with the Minister as provided by section 4 of this Act;

"Guaranteed analysis."

(*e*) "guaranteed analysis" means the valuation of a commercial feeding stuff by the manufacturer or agent, in terms of its minimum content of protein and fat, and its maximum content of fibre.

Distinct brands.

3. Commercial feeding stuffs shall be considered as of distinct brands when differing either in guaranteed composition, trade mark, name, or in any other characteristic method of marking.

Name of foreign manufacturer's agent or representative in Canada to be filed with Minister.

4. Where the manufacturer of any commercial feeding stuff has his factory or chief place of business elsewhere than in Canada, he shall file with the Minister the name of a person resident in Canada and acceptable to the Minister, or a corporation having its head office in Canada, as the agent or representative of such manufacturer for all the purposes of this Act; and any notice to, or communication or dealing with, such agent or representative by the Minister shall be effectual for all the purposes of this Act.

Default of filing.

2. In default of such filing, the Minister may take any proceeding or action under this Act *ex parte*, and without any notice to, or communication with such person or corporation.

Registration number.

5. Every brand of commercial feeding stuff offered for sale in Canada shall bear a registration number, which shall be permanently assigned to the particular brand of feeding stuff for which it is issued. The number shall be granted by the Minister on the application of the manufacturer of such brand of feeding stuff, or his agent, and on payment of a fee of two dollars.

Fee.

Application for registration number.

6. Every application for a registration number shall be accompanied by a statement giving the following particulars:—

(*a*) Name of brand for which the registration number is asked, and trade mark, if any;

(*b*) Name and address of manufacturer;

(*c*) Name and address of the person applying for registration;

(*d*) Guaranteed analysis;

(*e*) The material of which the food is composed. This is required to be filed in the department, for the information of the Minister, not for publication.

Registration number, how affixed.

7. The registration number must be affixed by the manufacturer, or agent, in a plain and legible manner to every package of commercial feeding stuff sold or offered for sale, and shall constitute an identification of the brand. In addition to the registration number there must be legibly printed, on every package of feeding stuff sold, the statement set out in schedule A to this Act. This condition shall be held to be fulfilled if a printed tag bearing the registration number, and the statement required, is securely attached to the package.

Statement required.

Notice of change of composition and application for new number.

8. If a manufacturer elects to change the composition of any commercial feeding stuff for which a registration number has been granted, he shall notify the Minister to that effect, and shall apply for a new registration number to designate the new or altered feeding stuff; and the former registration number shall be cancelled, and shall not be reissued.

Annual license to sell.

9. No manufacturer of commercial feeding stuff, and no agent of any such manufacturer, shall sell or offer for sale commercial feeding stuff, as defined by section 2 of this Act, unless he has a license under this Act authorizing the sale thereof.

Fee.

2. Upon application of any such manufacturer or his agent, and upon payment of a fee of five dollars therefor, the Minister may grant a license authorizing the sale of such brands of commercial feeding stuff as are named in the license.

Period of validity.

3. Such license shall be in such form as the Minister prescribes, and shall confer authority to sell during the calendar year in which the license is issued.

Renewal.

4. The Minister may renew any such license from year to year.

Purchaser of registered feeding stuff may obtain analysis.

10. Any purchaser of a registered commercial feeding stuff may obtain from the Minister an analysis of the feed as delivered to him, by making application for such analysis, accompanied by a sample of the feed of at least one pound weight, and taken in accordance with the directions given in schedule B to this Act; and on payment of a fee of one dollar.

Fee.

Certain officers to act as inspectors.

R.S., c. 133.

11. The officers of Inland Revenue, the officers of Customs, the inspectors and deputy inspectors of weights and measures, and the inspectors of food, drugs and agricultural fertilizers acting under *The Adulteration Act* shall, when required so to do by any regulation made in that behalf by the Governor in Council or the Minister, act as inspectors of commercial feeding stuffs, and shall procure and submit for analysis samples of feeding stuffs offered for sale in Canada.

Inspectors to procure samples for analysis.

12. Every inspector of commercial feeding stuffs shall, whenever instructed by the Minister so to do, obtain for analysis a sample of every feeding stuff offered for sale in the district for which such inspector is appointed.

Analysis and publication of results.

2. Every sample so obtained shall be transmitted to the Minister for submission to the chief analyst for analysis; and the result of all such analyses shall be published annually by the Minister in such manner as he sees fit, together with such other information pertaining to commercial feeding stuffs as he deems it desirable should be published.

Feeding stuff imported for personal use.

13. If any feeding stuff is imported for the personal use of the importer, and not for sale, this Act shall not apply thereto, but such importer may secure an analysis of the feed as delivered to him, on application to the Minister and on payment of a fee of five dollars. The sample submitted must be taken in accordance with the requirements of section 10 of this Act.

Analysis.

Feeding stuff made to order, and not for sale

14. This Act shall not apply to feeding stuffs which are manufactured to the order of the purchaser and are not in-

tended for sale, unless such feeding stuffs be actually sold by such purchaser; but such purchaser may secure an analysis of the feed as delivered to him, under the conditions stated in section 10 of this Act and on payment of a fee of five dollars.

Analysis.

Penalties for non-compliance with Act.

15. Every manufacturer or agent, or purchaser in cases provided for in the next preceding section, who sells or offers or exposes for sale any commercial feeding stuff in respect of which the provisions of this Act have not been complied with, or who sells or offers or exposes for sale any feeding stuff which does not contain the percentage of constituents mentioned in the manufacturer's statement or certificate accompanying such feeding stuff, shall be liable in each case to a penalty not exceeding fifty dollars for the first offence, and for each subsequent offence to a penalty not exceeding one hundred dollars and, in default of payment of such penalty, to imprisonment for thirty days; provided that a deficiency of one per cent of the protein, or fat, or an excess of two per cent of fibre claimed to be contained in the feeding stuff shall not be considered as evidence of fraudulent intent, if the total value of the feeding stuff in nutritive materials is substantially equivalent to the guaranteed statement made by the manufacturer or agent.

Proviso as to evidence of fraudulent intent.

Forgery of certificate, registration number, etc.

16. Every person who forges, or utters or uses knowing it to be forged, any manufacturer's certificate, registration number, or certificate of analysis required under this Act, is guilty of an indictable offence, and is liable to imprisonment for a term not exceeding two years, with or without hard labour.

Penalty.

Unlawful use of certificate, tag or number.

17. Every person who wilfully applies to any commercial feeding stuff a certificate, or tag, or registration number given in relation to any other package or lot of feeding stuff, and every person who sells an unregistered feeding stuff, and every person who lowers the nutritive value of a feeding stuff by mixing any other substances therewith, after the said feeding stuff has been placed on the market by the manufacturer or agent, shall be liable, on summary conviction, to a penalty not exceeding five hundred dollars and, in default of payment, to imprisonment for a term not exceeding twelve months.

Penalty.

False certificate.

18. Every person who gives a false certificate in writing with respect to a commercial feeding stuff sold by him as a principal or agent shall be liable on summary conviction to a penalty not exceeding five hundred dollars, and in default of payment to imprisonment for a term not exceeding twelve months.

Penalty.

Application of fees and penalties.

19. All fees paid and penalties recovered under this Act shall form part of the Consolidated Revenue Fund of Canada.

20. This Act shall come into force on the first day of January, one thousand nine hundred and ten. Commencement of Act.

SCHEDULE A.

STATEMENT TO BE ATTACHED TO PACKAGE.

1. (*Name of brand.*)
2. (*Registration number.*)
3. (*Name and address of manufacturer.*)
4. (*Analysis as guaranteed by the manufacturer, which shall show the percentage content of protein, fat and fibre.*)
5. Notice: Any purchaser may have an analysis made by the Department of Inland Revenue, on payment of one dollar. Samples must be taken in conformity with the regulations. For regulations address the Deputy Minister of Inland Revenue, Ottawa.

SCHEDULE B.

INSTRUCTIONS FOR TAKING SAMPLES OF FEEDING STUFFS TO BE SUBMITTED FOR ANALYSIS IN ACCORDANCE WITH SECTION 10.

Samples of feeding stuffs submitted by a purchaser for analysis must be inclosed in glass jars or bottles, and properly sealed. The samples must be taken in the presence of the vendor or of his representative.

Process of Sampling.

In lots of five tons, or less, portions shall be drawn from each separate package, and from at least ten packages; or if less than ten packages are present, all shall be sampled. In lots of over five tons, at least ten per cent of the packages shall be sampled. The portions so taken shall be thoroughly mixed in the presence of the parties interested, and from this mixture the sample sent to the Minister is to be taken, and must bear the signature of vendor and purchaser; and at the same time a duplicate sample is to be left with the party whose goods are inspected, subject to the call of the manufacturer or agent.

OTTAWA : Printed by CHARLES HENRY PARMELEE, Law Printer to the King's most Excellent Majesty.

TABLE I—STOCK FEEDS.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion).	Results of Analysis. Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference.	Number of Sample.
DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR.								p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
1909														
May 7	Stock feeds	33841	F. A. Shaw, Halifax, N.S.	5 lbs.	5	American Cereal Co., Chatham, Ont.	Bran	10·59	4·53	14·44	9·08	5·86	55·50	33841
" 10	"	33842	E. M. Walker, Dartmouth, N.S.	5 "	10	Tillson Milling Co., Tillsonburg, Ont.	Middlings	9·05	3·50	16·19	10·55	4·16	56·55	33842
" 12	"	33843	Embree & Trenholm, Amherst, N.S.	5 "	5	Western Canada Flour Mills Co., Ontario.	Bran	10·93	3·12	14·25	11·05	3·92	56·73	33843
" 15	"	33844	J. Ernst & Son, Mahone, N.S.	5 "	5	Saskatchewan Flour Mills Co., Moosejaw, Sask.	"	10·78	3·55	16·25	9·86	5·76	53·80	33844
" 17	"	33845	Walter Moore, Kentville, N.S.	5 "	5	S. L. Cross, Kentville, N.S.	"	9·40	3·90	15·69	10·00	5·46	55·55	33845
" 17	"	33846	S. L. Cross, Kentville, N.S.	5 "	5	Ogilvie Flour Mills Co., Montreal.	"	10·90	3·60	14·19	9·38	5·60	56·33	33846
" 18	"	33847	T. L. Harvey, Wolfville, N.S.		5	Unknown	"	9·60	1·25	14·88	11·25	5·16	54·86	23847
" 20	"	33848	Frank Fraser, Halifax, N.S.	5 "	5	"	"	11·61	2·75	15·50	8·49	5·34	56·31	33848
" 20	"	33849	Jas. Hogan, Halifax, N.S.	5 "	5	Gunn & Co., Halifax, N.S.	"	10·80	2·36	13·81	10·84	5·28	56·91	33849
" 20	"	33850	J. D. Stewart, Halifax, N.S.	5 "	5	Wm. Muir & Son, Halifax, N.S.	"	11·06	4·80	14·88	9·38	5·61	54·24	33850
" 7	"	33851	F. A. Shaw, Halifax, N.S.	5 "	10	T. H. Taylor, Chatham, Ont.	Middlings	10·35	3·98	14·94	5·87	4·40	60·46	33851
" 7	"	33852	Alex. Adams & Co., Halifax, N.S.	5 "	10	Ogilvie Milling Co., Montreal.	"	11·00	3·39	16·00	7·20	3·90	58·51	33852
" 7	"	33853	I. B. Shaffner & Co., Halifax, N.S.	5 "	....	Neil McCahill, Forrest, Ont.	"	11·15	3·09	14·19	6·43	4·40	60·74	33853
" 10	"	33854	B. O. Bishop, Dartmouth, N.S.	5 "	10	Nova Scotia Milling Co., Dartmouth, N.S.	"	10·47	4·03	15·06	6·37	1·36	59·71	33851
" 10	"	33855	S. A. Thomson, Dartmouth, N.S.	5 "	8	Goldie Milling Co., Ont.	"	11·17	4·46	14·38	5·47	4·00	60·52	33855
" 11	"	33856	J. S. Cashen, Halifax, N.S.	5 "	10	Wm. Muir & Son, Halifax, N.S.	"	10·78	4·40	15·12	6·04	4·74	58·92	33856

"	14	"	..	33857	R. Feindel, Bridgewater, N.S.	5	"	.	5	Unknown	"	11·02	4·31	15·56	5·36	4·20	59·55	33857
"	14	"	..	33858	H. C. Barnaby, Bridgewater, N.S.	5	"	.	5	Broot Wool Milling Co., Brantford, Ont.	"	10·56	3·58	13·38	4·38	3·50	64·60	33858
"	11	"	..	33859	R. Dawson & Son, Bridgewater, N.S.	5	"	....		" " ..	"	10·40	3·66	15·31	7·04	4·28	59·31	33859
"	20	"	..	33860	Wentzells Ltd., Halifax, N.S.	5	"	...		Saskatchewan Flour Mills Co., Moosejaw, Sask.	Bran.....	11·01	3·71	14·69	9·72	5·90	57·97	33860
"	7	"	..	33861	S. C Thompson, Halifax, N.S.	5	"	.	10	Unknown.....	Shorts	10·80	4·75	16·31	7·19	4·86	56·09	33861
"	10	"	..	33862	S. Mott, Dartmouth, N.S .	5	"	.	10	Nova Scotia Milling Co., Dartmouth, N. S.	"	10·73	4·39	14·88	5·47	4·10	60·43	33862
"	10	"	..	33863	Nova Scotia Milling Co., Dartmouth, N.S.	5	"		10	G. Carter Son & Co., St. Marys, Ont.	"	11·25	4·67	14·91	6·35	3·92	58·87	33863
"	10	"	..	33864	John Davison & Son, Halifax, N.S.	5	lbs.		5	Nova Scotia Milling Co., Dartmouth, N.S.	Shorts	10·98	5·10	15·81	7·37	4·10	56·64	33864
"	11	"	..	33865	Gunn & Co., Halifax, N.S ..	5	"	....		McLeod Milling Co., Stratford, Ont.	"	11·37	4·82	14·88	5·80	3·98	59·15	33865
"	11	"	..	33866	E. J. Fenton, Halifax, N.S..	5	"	.	10	Ogilvie Milling Co., Montreal.	"	11·15	4·82	14·06	7·45	4·88	57.64	33866
"	15	"	.	33867	C. N. Mader, Mahone, N.S..	5	"	....		DeLong & Seaman, Boston.	"	10·02	5·16	16·25	6·11	5·50	56·96	33867
"	18	"	..	33868	R. E. Harris & Son, Wolfville, N.S.	5	"	.	10	Woodburn Milling Co., Glencoe, Ont.	"	10·36	3·84	14·88	5·95	4·48	60·49	33868
"	20	"	..	33869	Frank Fraser, Halifax, N.S.	5	"	.	10	Unknown.	"	10·37	2·96	14·44	7·92	4·80	59·51	33869
"	20	"	..	33870	E. Donahoe & Son, Halifax, N.S.	5	"	.	10	Ogilvie Flour Mills Co., Montreal.	"	9·85	4·35	16·88	11·90	4·74	52·28	33870
"	7	"	..	33871	I. B. Shaffner & Co., Halifax, N.S.	5	"	.	10	Quaker Oats Co., Peterboro', Ont.	Chop feed	10·04	2·15	8·06	13·00	3·60	63·15	33871
"	10	"	..	33872	T. D. Knowles & Co., Halifax, N.S.	5	"	.	10	Ogilvie Milling Co., Montreal.	"	10·34	3·61	16·00	13·03	3·22	59·80	33872
"	11	"	..	33873	Gunn & Co., Halifax, N.S ..	5	"	....		Vendors.....	"	10·57	2·93	10·12	6·55	2·74	67·09	33873
"	12	"	..	33874	Moffatt Bros., Amherst, N.S.	5	"	.	13	R. W. Oliver, Montreal....	" ...	10·85	3·17	10·88	10·76	2·70	61·64	33874
"	12	"	..	33875	T. R. Angus, Amherst, N.S.	5	"		10	Quaker Oats Co., Peterboro', Ont.	"	10·00	2·40	8·69	10·15	2·28	66·48	33875
"	13	"	..	33876	J. A. Hunson, Truro, N.S ..	5	"	.	10	Flavelle Milling Co., Lindsay, Ont.	"	8·50	2·65	8·56	12·90	3·74	63·65	33876
"	13	"	..	33877	W. C. Sumner, "		"	.	..	Vendor.....	"	9·35	3·45	9·38	8·60	2·40	66·82	33877
"	14	"	..	33878	H. S. Hall, Bridgewater, N.S.	5	"	.	5	Tillson, Tillsonburg, Ont...	"	10·02	4·08	10·75	7·49	3·62	64·04	33878
"	17	"	..	33879	W. A. Smith, Kentville, N.S.	5	"	.	5	Unknown..... ..	"	10·35	2·90	14·81	11·45	3·91	56·55	33879
"	17	"	.	33880	S. L. Cross, "	5	"	.	5	Ogilvie Flour Mills Co., Montreal.	"	10·41	2·70	15·38	7·22	4·31	59·95	33880

TABLE I—STOCK FEEDS.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion).	Results of Analysis. Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference	Number of Sample.
DISTRICT OF PRINCE EDWARD ISLAND—THEO. MOORE, INSPECTOR.														
1909.								p. c.	p. c.	p. c.	p. c	p. c.	p. c.	
May 5	Stock Feeds..	38521	Auld Bros., Charlottetown.	5 lbs.	....	Wolverton Milling Co., Wolverton, Ont.	Bran	10·39	3·84	14·06	9·61	6 00	56·07	38521
" 5	" ..	38522	Arthur Edmonds, Charlottetown.	5 "	10	Carvell Bros., Charlottetown.	"	10·74	3·80	15·12	9·74	5·84	54·76	38522
" 6	" ..	38523	R. E. Mutch, Charlottetown.	5 "	10	Ogilvie Milling Co., Montreal	"	11·59	1·86	14·00	8·17	5·16	59·22	38523
" 6	" ..	38524	A. Horn & Co., Charlottetown.	5 "	8	Goldie Milling Co., Galt, Ont.	"	10·61	3·24	13·56	8·70	6·24	57·65	38524
" 6	" ..	38525	Sanderson & Co., Charlottetown.	5 "	8	Wolverton Milling Co., Wolverton, Ont.	"	10·60	3·80	14·28	10,06	6·20	55·06	38525
" 7	" ..	38526	W. W. Walker, Charlottetown.	5 "	8	N. Rattenbury, Charlottetown.	Bran.....	10·86	4 33	15·56	8·29	5·36	55 60	38526
" 11	" ..	38527	Mathew & McLean, Souris..	5 "	10	Pictou Flour Mills, Pictou, N.S.	"	11·30	3·25	12·69	11·35	5·84	55·57	38527
" 11	" ..	38528	A. L. McDonald, Souris....	5 "	12	Campbell Milling Co., Toronto Junction.	"	11·58	1 42	13·56	9·46	5·94	58·01	38528
" 11	..	38529	J. B. Andrew, Charlottetown, Royalty.	5 "	10	Vendor	"	12 59	3·69	14·25	6·77	5·00	57·70	39529
" 11	" ..	38530	C. Gates, Charlottetown, Royalty.	5 "	10	"	"	12·91	4·18	14·50	5·88	5·10	57 43	38530
" 5	" ..	38531	Auld Bros., Charlottetown..	5 "	10	Wolverton Milling Co., Wolverton, Ont.	Shorts..... .	11·26	4·88	15·12	5·26	4·30	59·18	38531
" 5	" .	38532	R. E. Mutch, Charlottetown	5 "	10	Jno. Campbell & Co., Ltd., St. Thomas, Ont.	"	12·01	4·52	15·12	4·85	3·90	59·60	38532
" 6	" ..	38533	A. Horn & Co., Charlottetown.	5 "	8	Campbell Milling Co., Toronto Junction.	"	10·86	4·13	11·50	4·85	4·10	51·56	38533
" 6	" ..	38534	Sanderson & Co., Charlottetown.	5 "	8	Wolverton Milling Co., Wolverton, Ont.	"	10·62	4 41	15·68	5·05	4·00	61 24	38534
" 6	" ..	38535	W. W. Walker, Charlottetown.	5 "	13	Unknown.....	"	10·50	3·00	11·63	4·35	1·01	69·48	38535
" 10	" ..	38536	W. D. Currie, Souris.....	5 "	10	Campbell Milling Co., Toronto Junction.	"	10·68	5·81	16·06	5·13	4·64	57·68	38536

"	10	"	..	38537	J. J. Hughes, Souris.....	5	"	.	8	J. W. Smith, Pictou, N.S..	"	.....	10·42	4·41	16·44	4·88	3·92	59·93	38537
"	11	"	..	38538	Mathew and McLean, Souris	5	"	.	10	Pictou Flour Mills, Pictou, N.S.	"	.. ..	11·55	3·40	14·06	1·06	1·90	68·03	38538
"	11	"	..	38539	J. B. Andrew, Charlottetown, Royalty.	5	"	.	10	Vendor	"	... .	13·09	1·80	11·63	0·30	0·96	72·22	28539
"	11	"	..	38540	F. Gates, Charlottetown, Royalty.	5	"	.	10	"	"	.....	13·27	1·33	10·00	1·37	1·70	72·33	38540

DISTRICT OF NEW BRUNSWICK—J. C. FERGUSON, INSPECTOR.

April	27	Stock feeds	..	29954	James Collins, St. John, N.B.	5	lbs.		15	De Witt Bros., Fairville, St. John, N.B.	Bran.....		10·30	3·55	11·50	8·17	5·34	58·14	29954
May	1	"	..	29955	L. C. Prime Co., Ltd., St. John, N.B.	5	"	.	10	Ogilvie Milling Co., Ltd., Canada.	"		7·90	4·40	13·87	12·15	5·30	56·38	29955
"	12	"	..	29956	J. B. Robinson, St. Stephen, N.B.	5	"	.	15	Tillson's, Tillsonburg, Ont..	"		11·15	5·30	13·31	8·79	5·80	55·65	29956
June	2	"	..	29957	W. B. McKay & Co., Sussex, N.B.	5	"	.	10	Lake of the Woods Milling Co., Keewatin.	"		10·61	4·52	15·31	10·55	5·68	53·33	29957
"	3	"	..	29958	James Doyle & Son, Moncton, N.B.	5	"	.	10	Flavelle Milling Co., Lindsay Ont.	"		12·29	4·03	14·50	9·80	5·20	54·18	29958
"	3	"	..	29959	Toombs & Son, Moncton, N.B.	5	"	.	15	McLeod Milling Co., Stratford, Ont.	"		11·79	3·08	13·75	8·68	5·60	57·10	29959
"	1	"	..	29960	J. B. Snowball Co., Ltd., Chatham, N.B.	5	"	.	10	Wolverton Milling Co., Wolverton, Ont.	"		13·37	3·90	13·81	9·08	5·70	54·14	29960
"	4	"	..	29961	E. A. Strang, Chatham, N.B.	5	"	.	10	Tavistock Milling Co., Ltd., Tavistoek, Ont.	Bran.....		12·89	2·90	12·31	9·90	5·90	56·10	29961
"	5	"	..	29962	A. C. Branch, Bathurst, N.B.	5	"	.	15	The Tillson Co., Ltd., Tillsonburg, Ont.	"		11·80	3·03	13·87	10·43	6·10	51·77	29962
"	5	"	..	29963	W. J. Kent Co., Ltd., Bathurst, N.B.	5	"	.	10	Quaker Oats Co., Peterboro, Ont.	"		12·16	3·85	14·87	8·47	5·64	55·01	29963
April	27	"	..	29964	W. J. Alexander, St. John, N.B.	5	"	.	15	A. C. Smith & Co., St. John, N.B.	Shorts.....		9·50	2·90	16·63	5·50	3·44	61·93	29964
"	28	"	..	29965	C. H. Peters Sons, Ltd., St. John, N.B.	5	"	.	15	Lake of the Woods Milling Co., Keewatin, Ont.	"		6·45	3·75	16·38	7·95	3·94	61·53	29965
"	7	"	..	29966	A. C. Smith & Co., St. John, N.B.	5	"	.	15	Ogilvie Flour Mills, Montreal.	"		9·00	5·25	15·31	8·40	4·01	58·00	29966
"	12	"	..	29967	J. B. Robinson Estate, St. Stephen, N.B.	5	"	.	15	A. I. Feed Co., Ltd., St. Stephen, N.B.	"		11·19	4·41	15·68	8·55	3·00	57·17	29967
"	12	"	..	29968	P. F. McKenna, St. Stephen, N.B.	5	"	.	15	" " ..	"		10·13	5·73	15·06	8·66	4·44	55·98	29968
"	13	"	..	29969	F. H. Everett, Fredericton, N.B.	5	"	.	15	J. Steinmiller, Walkerton. Ont.	"		10·75	4·96	15·31	8·12	5·08	55·78	29969
"	11	"	..	29970	L. C. Prime Co., Ltd., Woodstock, N.B.	5	"	.	15	The Campbell Milling Co., Ltd., West Toronto, Ont.	"		11·45	4·39	14·94	4·56	3·62	51·04	29970
"	17	"	..	29971	The Perth Milling Co., Ltd., Perth, N.B.	5	"	.	15	Vendors.....	"		11·80	3·79	15·81	8·75	4·50	55·35	29971
"	17	"	..	29972	Geo. DeWitt, Andover, N.B.	5	"	.	10	DeWitt Bros., St. John, N.B.	"		11·02	5·55	15·93	8·02	4·80	54·68	29972

TABLE I—STOCK FEEDS.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis. Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference	No. of Sample.
DISTRICT OF NEW BRUNSWICK—J. C. FERGUSON, INSPECTOR.—*Continued.*														
1909.								p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
June 3	Stock feeds..	29973	William H. Edgett, Moncton, N.B.	5 lbs.	10	Ogilvie Milling Co., Canada	Shorts.....	11·15	3·87	16·00	7·81	4·80	56·37	29973
April 27	" ..	29974	William Dunlop & Sons, St. John, N.B.	5 "	15	Goldie Milling Co., Canada.	Middlings....	11·08	3·55	14·62	4·61	4·26	61·85	29974
" 27	" ..	29975	E. Walsh & Co., St. John, N.B.	5 "	15	A. C. Smith & Co., St. John, N.B.	"	10·10	4·35	16·69	3·55	3·26	62·05	29975
May 12	" ..	29976	McAllister Bros., St. Stephen, N.B.	5 "	15	Campbell Milling Co., Toronto Junction, Ont.	"	11·45	4·38	15·93	6·63	4·51	57·07	29976
" 13	" ..	29977	John Gibson & Son, Fredericton, N.B.	5 "	15	Seaforth Milling Co., Seaforth, Ont.	"	11·17	4·70	14·62	5·51	3·74	60·26	29977
" 14	" ..	29978	J. M. Fripp, Woodstock, N.B.	5 "	15	Meduxnakeag Roller Mills, Woodstock, N.B.	"	12·14	3·10	13·81	3·03	2·54	65·38	29978
June 2	" .	29979	Sussex Mercantile Co., Ltd., Sussex, N.B	5 "	10	Lake of the Woods Milling Co., Ltd.	" . .	10·69	5·14	16·81	6·43	3·80	57·13	29979
" 3	" ..	29980	H. J. Leaman, Moncton, N.B.	5 "	15	Western Canada Flour Mills, Ltd., Canada.	"	10·67	4·93	16·87	5·36	4·01	58·13	29980
" 3	" ..	29981	William Murray, Moncton, N.B.	5 "	10	Goldie Milling Co., Ltd., Canada.	"	11·55	4·68	14·37	5·63	4·04	59·73	29981
" 4	" ..	29982	The Stothart Mercantile Co., Ltd., Newcastle, N.B.	5 "	10	The F. H. Taylor Co., Ltd., Chatham, Ont.	" .. .	13·50	4·11	14·81	5·83	4·08	57·67	29982
" 4	" ..	29983	Baird & Peters, Newcastle, N.B.	5 "	20	The Ogilvie Milling Co., Ltd., Montreal.	"	12·00	5·75	17·00	5·13	3·90	56·22	29983
April 20	" ..	29984	Ira B. Kierstead, St. John, N.B.	5 "	15	A. C. Smith & Co., St. John, N.B.	Chop feed (Moulée).	9·00	1·80	8·68	7·85	3·60	69·07	29984
May 3	" ..	29985	N. S. Springer, St. John, N.B.	5 "	15	Woodburn Milling Co., Glencoe, Ont.	" ..	10·00	3·05	10·00	7·90	3·24	65·81	29985
" 3	" ..	29986	J. Harrison & Co., St. John, N.B.	5 "	15	Ogilvie Milling Co., Montreal.	" .	9·00	4·22	12·62	4·60	1·94	67·62	29986
" 3	" ..	29987	P. Nase & Son, St John, N.B.	5 "	15	Quaker Oats Co., Peterboro, Ont.	" ..	10·75	3·45	8·25	6·35	2·44	68·76	29987
" 12	" ..	29988	T. R. Speedy, St. Stephen, N.B.	5 "	15	R. W. Oliver Milling Co., Montreal.	" ..	10·04	0·90	11·37	25·80	4·00	47·89	29988

"	13	"	..	29989	A. H. Vanwart, Fredericton, N.B	5	"	..	15	Ogilvies, Montreal	"	..	11·26	4·56	11·31	3·87	4 08	64·92	29989
"	13	"	..	29990	John Gibson & Son, Fredericton, N.B.	5	"	..	15	The Flavelle Milling Co., Lindsay, Ont.	"	..	9·75	3·10	8·25	10·65	4·08	64·17	29990
"	14	"	..	29991	L. C. Prime Co., Ltd., Woodstock, N.B.	5	"	..	15	Campbell Milling Co., Ltd., West Toronto, Ont.	"	..	11·97	4·10	12·25	6·98	3·64	61·06	29991
"	17	"	..	29992	The Perth Milling Co., Perth, N.B.	5	"	..	15	Vendors	"	..	12 21	3·10	9·69	13·80	4·50	56·70	29992
June	2	"	..	29993	Sussex Mercantile Co., Ltd., Sussex, N.B.	5	"	..	10	Flavelle Milling Co., Lindsay, Ont.	"	..	12·05	1·72	10 68	8·15	4·46	62·94	29993
"	2	"	..	30000	"	"		..	5	"	10	The Wallaceburg Sugar Co., Ltd., Wallaceburg, Ont.	Natural molasses Stock food.	18·17	0·41	9·12	10·90	5·40	56·00	30000

DISTRICT OF QUEBEC—E. BELAND, INSPECTOR.

April	26	Stock feeds	..	36732	Julien & Vezina, 1230 Rue St. Valier, Quebec.	5	lbs	..	7	Boissevain, Manitoba	Bran		10·94	3·78	15·94	7·47	4·68	57·19	36732
"	26	"	..	36733	N. Bertrand, 685 Rue St. Valier, Quebec.	5	"	..	8	Ogilvies, Montreal	"		10·57	4 96	15·13	8·65	5·64	55·05	36733
"	26	"	..	36734	P. Reneaud, 597 Rue St. Valier, Quebec.	5	"	..	8	Kerouack & Fils, Quebec	"		10·89	6·06	15·25	7·97	5 74	54·09	36734
"	26	"	..	36735	A. A. Cantin, 555 Rue St. Valier, Quebec.	5	"	..	15	Unknown	"		10·81	4 07	14·81	8·96	5·60	55·75	36735
"	27	"	..	36736	O. Bacon, 28 Rue Hermine, Quebec.	5	"	..	10	P. T. Busere, Quebec	"		10·20	4·00	14·63	7·70	5·88	57·59	36736
"	27	"	..	36737	T. Pepin, 132 Rue Massue, Quebec.	5	"	..	10	Kerouack & fils, Quebec	"		9·25	3·90	14·88	8·45	6·00	57·52	36737
"	27	"	..	36738	L. Dupuis, 23 Rue Dollard, Quebec.	4	"	..	5	N. Bertrand, Quebec	"		10·81	2·96	14 62	8·96	6·16	56·49	36738
"	27	"	..	36739	A. Patry, 922 Rue St. Valier, Quebec.	4	"	..	10	W. Carrier & fils, Quebec	"		10 91	4·42	15·25	8·56	5·80	55·06	36739
"	27	"	..	36740	G. E. Hamel, 914 Rue St. Valier, Quebec.	4	"	..	10	Unknown	"		10·74	4·37	14·81	9 42	5·54	55·12	36740
"	27	"	..	36741	P. E. Kirvnack, 1105 Rue St. Valier, Quebec.	4	"	..	10	"	"		10·61	4·15	15·75	6·23	4·24	59·02	36741
"	26	"	..	36742	Julien & Vezina, 1230 Rue St. Valier, Quebec.	4	"		10	Boissevain, Manitoba	Shorts		10·00	2·30	15·06	5·80	3·00	63·84	36742
"	26	"	..	36743	N. Bertrand, 685 Rue St. Valier, Quebec.	5	lbs	..	9	William Scott, Montreal	"		9 91	3 74	14·94	9·24	4 84	57·33	36743
"	26	"	..	36744	P. Renaud, 597 Rue St. Valier, Quebec.	5	"	..	10	Unknown	"		10 45	4·10	14·94	9·85	2·70	57·96	36744
"	26	"	..	36745	A. A. Cantin, 555 Rue St. Valier, Quebec,	5	"	..	15	"	"		11·07	2·42	14·38	2·48	2·20	67·45	36745
"	27	"	..	36746	O. Bacon, 28 Rue Hermine, Quebec.	5	"	.	10	P. T. Busiere, Quebec	"		10·82	2·77	14 38	3 63	2·94	65·46	36746

TABLE I—STOCK FEEDS.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion.)	Results of Analysis. Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference	Number of Sample.
DISTRICT OF QUEBEC—*Continued.*														
1909.								p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
April 27	Stock Feeds..	36747	T. Pepin, 132 Rue Massue, Quebec.	5 lbs..	10	W. Carrier & fils, Quebec...	Shorts....	10·93	4·37	15·69	9·62	3·36	56·03	36747
" 27	" ..	36748	L. Dupuis, 23 Rue Dollard, Quebec.	5 " ..	10	N. Bertrand, Quebec.....	"	10·50	2·15	15·06	5·50	2·50	64·29	36748
" 27	" ..	36749	P. S. Kironack, 1105 Rue St. Valier, Quebec.	5 " ..	10	Unknown	"	11·02	4·00	17·06	5·52	4·14	58·26	36749
" 27	" ..	36750	T. U. Robitaille, 1283 Rue St. Valier, Quebec.	5 " ..	10	"	"	9·95	2·85	14·50	6·35	4·24	62·11	36750
" 27	" ..	36751	T. B. Reneaud & Cie., Quebec.	5 " ..	10	"	"	10·86	3·61	15·25	5·19	3·22	61·87	36751
" 27	" ..	36752	N. Bertrand, 685 Rue St. Valier, Quebec.	5 " ..	10	William Scott, Montreal...	Middlings ...	10·50	2·00	13·56	5·10	3·30	65·54	36752
" 27	" ..	36753	P. Reneaud, 597 Rue St. Valier, Quebec.	5 " ..	10	Unknown	"	10·40	3·65	13·09	10·32	3·94	58·60	36753
" 27	" ..	36754	A. Patry, 922 Rue St. Valier, Quebec.	5 " .	10	W. Carrier & fils, Quebec...	"	10·36	4·59	15·68	4·14	3·58	61·65	36754
" 27	" ..	36755	M. Begin, 105 Rue St. Roch, Quebec.	5 " ..	10	E. M. Lennon & Co., Quebec	"	11·81	4·21	16·62	5·67	3·80	57·86	36755
" 27	" ..	36756	T. B. Reneaud & Cie., Quebec.	5 " ..	10	Unknown	"	10·00	2·25	15·31	4·95	2·20	65·29	36756
" 27	" .	36757	G. Tanguay, Quebec	5 " ..	10	Howards Co., Montreal ..	"	10·84	3·33	15·31	5·32	4·68	60·52	36757
" 27	" ..	36758	W. Carrier & fils, Quebec.	5 " ..	10	Lake of the Woods, Montreal.	"	11·08	3·49	16·44	6·02	3·80	59·17	36758
" 27	" ..	36759	E. M. Lennon, Quebec.....	5 " ..	10	Carnduff, Saskatchewan....	"	10·64	3·62	11·41	1·44	2·10	67·76	36759
" 27	" ..	36760	D. E. Drolet, Quebec.	5 " ..	10	Lake of the Woods.....	"	10·10	1·35	16·18	12·15	3·91	53·28	36760
" 27	" ..	36761	C. A. Paradis, Quebec.....	5 " ..	10	Ogilvies, Montreal.	" .. .	10·55	5·18	16·56	5·63	4·08	58·00	36761
" 26	" ..	36762	Julien & Vezina, 1230 Rue St. Valier, Quebec.	5 " ..	10	Vendors.....	Chop feed.....	8·00	3·05	9·41	13·05	3·14	63·12	36762

"	26	"	..	36763	N. Bertrand, 282 Rue St. Valier, Quebec.	5	"	..	10	H. C. Bossé, Quebec.....	"	.....	11·07	3·22	11·69	12 85	4·40	56·77	36763
"	26	"	..	36764	A. A. Cantin, 555 Rue St. Valier, Quebec.	5	"	..	15	Unknown	"	.....	10·38	2 79	10·06	10·56	3·14	63·07	36761
"	27	"	..	36765	O. Bacon, 28 Rue Hermine, Quebec.	5	"	..	10	T. E. Robitaille, Quebec....	"	.....	11·85	1·53	7·19	17 06	3·92	58·45	36765
"	27	"	..	36766	T. Pepin, 138 Rue Massue, Quebec.	5	"	..	13	Vendor	"	.. ..	10·05	3·55	10·75	12·40	3 00	60·25	36766
"	27	"	..	36767	L. Dupuis, 23 Rue Dollard, Quebec.	5	"	..	10	N. Bertrand, Quebec. . .	"	.....	10·50	1·60	12·31	8·00	3·60	63 99	36767
"	27	"	..	36768	A. Patry, 922 Rue St. Valier, Quebec.	5	"	..	10	E. M. Lennon & Co., Quebec.	"	. .	10·86	4·11	11·19	9·47	3·50	61·05	36768
"	27	"	..	36769	B. E. Kirouack, 1105 Rue St. Valier, Quebec.	5	"	..	10	Unknown	"	.....	9·55	2·00	12·19	9 00	3·50	63·76	36769
"	27	"	..	36770	P. Plante, 54 Rue St. Lac, Quebec.	5	"	..	8	"	"	...	10·96	3 12	13·19	7·64	4·50	60·59	36770
"	27	"	..	36771	T. U. Robitaille, 1283 Rue St. Valier, Quebec.	5	"	..	10	E. U. Robitaille, Quebec....	"	.....	10·87	4·33	10·06	12·75	4·20	57·79	36771

DISTRICT OF ST. HYACINTHE, J. C. ROULEAU, INSPECTOR.

April	26	Stock feeds...		38801	J. Dauphinais, Vill. et St. Hilaire.	3 lbs.			5	Ogilvie Milling Co., Montreal.	Bran.....		10·33	3·92	14·81	9·88	5·88	55·18	38801
"	27	"	..	38802	M. Bousquet, St. Hyacinthe	5	"	.	10	James Cumming, Lynn, Ont	"	.....	9·66	3·16	14·81	8·73	5·44	57·90	38802
"	27	"	..	38803	J. M. Palardy, St. Hyacinthe.	5	"	..	10	Lake of the Woods Milling Co., Montreal.	"	.....	10·94	5·54	15·56	9·40	5·84	52·72	38803
May	5	"	..	38804	Biron & Blouin, E. Sherbrooke.	5	"	..	..	Unknown	"	.....	10·40	3·70	14·37	11·90	4·60	55·03	38804
"	18	"	..	38805	A. S. Lamoureux, Contrécoeur.	5	"	..	10	Ogilvies	"	.....	12·32	4·10	15·75	7·93	5·28	54·62	38805
"	24	"	..	38806	E. Chaput, Egypte de Milton.	5	"	..	10	Wm. Scott & Co., Ottawa..	"	... .	12·23	3 68	15 81	8·82	7·16	52·30	38806
"	24	"	..	38807	R. Lapierre, St. Dominique.	5	"	..	10	J. M. Palardy, St. Hyacinthe.	"	.....	10·24	6·93	15 31	9·19	5·40	52·93	38807
"	24	"	..	38808	Fagnan & Lebrun, St. Dominique.	5	"	..	10	C. Racicot, (Th Maple Leaf Flour Mills Co.) St. Hyacinthe.	"	.....	10·20	5·51	15·56	8·47	5·44	54·82	38808
"	26	"	..	38809	F. Bachaud, Waterloo.....	5	"	..	10	Wm. Scott & Co., Ottawa .	"	... .	11·09	3·75	12·69	12·67	5·10	54·70	38809
"	27	"	..	38810	D. Gervais, Iberville.....	5	"	..	10	Ogilvies	"	.....	13·09	3·06	14·62	8·75	5·18	55·30	38810
"	27	"	..	38812	M. Bousquet, St. Hyacinthe.	5	"	.	10	James Cumming, Lynn, Ont.	Shorts.....		9·90	2·70	15·38	5·90	4·60	61·52	35812
"	27	"	..	38813	J. M. Palardy, St. Hyacinthe.	5	"	..	10	Lake of the Woods Milling Co., Montreal.	"	....	10·88	4·16	15·75	6·81	4·36	58·04	38813
"	28	"	..	38814	Marin & Langelier, Upton.	5	"	..	8	Ogivie Milling Co., Montreal.	"	.. . .	10·17	3·66	15·50	7·75	4·26	58·66	38814

TABLE I—STOCK FEEDS.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion.)	Results of Analysis. Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference.	Number of Sample.
DISTRICT OF ST. HYACINTHE—*Concluded.*														
1909.								p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
April 29	Stock feeds	38815	L. O. Pepin et fils, Arthabaska.	5 lbs.	8	Lake of the Woods	Shorts	9·10	1·30	15·75	6·30	4·28	60·27	38815
" 29	"	38816	C. O. Roberge, Victoriaville.	5 "	8	Winker Milling Co., Manitoba.	"	11·04	3·34	15·69	2·70	2·80	64·43	38816
May 5	"	38817	Biron & Blouin, E. Sherbrooke.	5 "	8	Denault Grain & Prov. Co., Sherbrooke.	"	9·82	4·75	16·56	7·65	4·30	56·92	38817
" 18	"	38818	A. Lamoureux, Contrecoeur	5 "	10	Ogilvies	"	11·24	4·20	15·68	6·50	4·40	57·98	38818
" 18	"	38819	Lapierre & frères, Pierreville.	5 "	10	Lake of the Woods	"	10·76	4·98	16·06	5·20	3·52	59·48	38819
" 19	"	38820	J. B. Gagne & fils, Sorel	5 "	8	E. A. Schmidt, Board of Trade Bldgs., Montreal.	"	11·60	5·27	16·56	5·44	4·04	57·09	38820
" 24	"	38821	A. Grisé, St. Pie Bagot	5 "	10	Lake of the Woods	"	10·49	5·22	15·93	6·02	3·90	58·44	38821
April 26	"	38823	F. Lafontaine, Belœil	5 "	8	Ogilvie Milling Co., Montreal.	Middlings	10·00	4·21	16·18	8·33	4·08	57·20	38823
" 28	"	38824	R. Tetrault, Roxton Falls	1½ "		Canadian Milling Agency, Victoriaville.	"	9·50	3·00	13·13	3·85	3·48	67·04	38824
" 28	"	38825	" "	1½ "		" "	"	8·35	3·25	14·81	5·75	1·40	53·44	38825
" 28	"	38826	Guertin & Archambault, Actonvale.	5 "	10	The Flavelle Milling Co., Lindsay, Ont.	"	10·40	3·10	16·13	8·25	3·46	58·66	38826
" 28	"	38827	E. J. Gauvin, Actonvale	5 "	10	Lake of the Woods Milling Co., Montreal.	"	10·61	3·66	16·25	5·70	3·60	60·18	38827
May 11	"	38828	N. Forcier, St. Guillaume	5 "	10	" "	"	9·99	3·43	15·31	4·70	3·71	62·83	38828
" 19	"	38829	J. B. Gagne & fils, Sorel	5 "	8	N. Lacoste, Montreal	"	11·86	3·80	15·06	6·10	3·70	59·48	38829
" 26	"	38830	Berthiaume Lanane, Farnham.	5 "		Ogilvies	"	11·94	3·75	15·56	6·15	3·90	58·70	38830
" 26	"	38831	F. Bachaud, Waterloo	5 "	10	C. R. Cousins & Co., St. Jean.	"	11·52	3·16	15·75	2·71	3·40	63·43	38831

"	27	"	..	38832	B. E. Goyette, Magog	5	"	.	10	The Flavelle Milling Co....	"	11·54	3·32	13·50	6·42	4·34	60·88	38832
April	27	"	..	38834	M. Bisquet, St. Hyacinthe.	5	"	.	10	Vendor.....	Chop feed (barley.)	9·80	2·25	10·50	6·15	2·60	68·70	38834
"	27	"	..	38835	J. M. Galardy, St. Hyacinthe	5	"	.	10	Lake of the Woods Milling Co., Montreal	Chop feed (oat).	8·60	2·65	9·25	6·70	4·18	68·62	38835
"	28	"	..	38836	McFail & Massé. Roxton Falls.	5	"	.	...	P. McIntosh & Son, Toronto	" (barley.)	9·00	2·40	13·06	3·90	2·80	68·84	38836
"	29	"	..	38837	C. O. Roberge, Victoriaville	5	"	.	....	Winker Milling Co., Man. .	Chop feed (b. meal.)	11·55	0·87	10·00	6·36	2·56	68·66	38837
May	5	"	..	38839	Clough & Co., Lennoxville.	5	"	.	....	Vendors.....	" ..	11·35	3·44	11·38	4·42	2·24	67·17	38839
"	6	"	..	38840	Brault & Paradis, Stanstead	5	"	.	10	The Quaker Oats Co., Peterboro, Ont.	Chop feed (victor.)	10·49	3·40	8·06	11·23	3·34	63·48	38840
"	11	"	..	38841	E. Sylvestre, St. Guillaume	5	"	.	....	C Racicot, St. Hyacinthe.	Chop feed (oats and barley.)	11·26	1·09	11·81	7·50	2·68	65·66	38841
"	18	"	..	38842	U. St. Jean, Contrecoeur...	5	"	.	10	Jos. Ward & Cie, Montreal.	Chop feed (flaxseed & barley.)	9·93	11·75	11·81	4·87	7·64	54·00	38842
"	18	"	..	38843	Laferriere & frères, Pierreville.	5	"	.	10	Lake of the Woods..... ..	Chop feed (wheat.)	11·96	2·30	14·87	4·29	3·50	63·08	38843
"	19	"	..	38844	J. B. Gagne fils, Sorel.....	5	"	.	8	Vendors.....	Chop feed (mixed.)	11·76	1·81	9·87	13·85	3·64	59·07	38844
"	24	"	..	38845	E. Chapnt, Egypte de Milton.	5	"	.	10	N. Mercier, Upton.. ..	Chop feed (corn)	10·60	2·85	8·81	1·85	1·30	74·59	38845

DISTRICT OF MONTREAL—J. J. COSTIGAN, INSPECTOR.

May	14	Stock feeds. .		40202	James McDonnell, 128 Wellington St., Montreal.	5	lbs..	10	.....	Bran.....	11·72	4·00	11·06	9·01	4·74	56·17	40202
"	14	"	..	40203	Bruneau Currie & Co., Youville Place, Montreal.	5	"	..	10	....	Bran (maple leaf brand).	11·61	4·25	14·62	8·80	5·48	55·24	40203
"	17	"	..	40204	W. L. Hogg, 1571 Notre Dame E., Montreal.	5	"	..	5	....	Bran.....	12·67	4·27	16·19	8·05	5·14	53·68	40204
"	18	"	.	40205	James Scott & Co., 132 St. Antoine St., Montreal.	5	"	..	10	....	"	10·58	3·93	15·56	7·73	5·38	56·82	40205
"	22	"	..	40206	The Can. Grain & Feed Co., 407 Cadieux St., Montreal.	5	"	..	5	Lake of the Woods Milling Co.	"	11·44	4·07	15·12	9·26	5·60	54·51	40206
"	26	"	..	40207	McDonald & Robb, Valleyfield, P.Q.	5	"	..	.....	Vendors.....	"	12·31	4·73	14·81	9·78	5·50	52·87	40207
"	27	"	..	40208	E. Benoit fils, 181 St. Paul St., Montreal.	5	"	..	10	Ogilvie Flour Milling Co. Ltd.	"	11·76	5·33	15·25	8·90	5·40	53·36	40208
June	3	"	..	40209	B. Vaillancourt, 1195 St. Lawrence B., Montreal.	5	"	..	10	....	"	10·25	4·33	13·62	16·21	6·40	55·19	40209
"	3	"	..	40210	B. Ethier, 1119 St. James St., Montreal.	5	"	..	10	....	"	12·30	3·65	14·50	9·87	5·90	53·78	40210
"	9	"	..	40211	Gustave Labelle & Cie., 1100 Dorchester St., Montreal.	5	"	..	10	....	"	11·74	3·39	15·06	8·63	5·46	55·72	40211
May	14	"	..	40212	James McDonnell, 128 Wellington St., Montreal.	5	"	..	15	... .	Shorts.....	11·37	5·69	15·94	7·35	4·54	55·11	40212

TABLE I—STOCK FEEDS.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion.)	Results of Analysis. Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference.	Number of Sample.
DISTRICT OF MONTREAL—*Concluded.*														
1909.								p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
May 14	Stock feeds	49213	Bruneau Currie & Co., Youville Place, Montreal.	5 lbs.			Shorts	11·62	5·66	14·19	5·00	3·90	59·63	40213
" 14	"	40214	F. X. Benoit et fils, 71 Commissioners, Montreal.	5 "	10		"	9·55	4·50	16·19	6·15	5·14	58·47	40214
" 17	"	40215	W. L. Hogg, 1571 Notre Dame St. E., Montreal.	5 "	5	T. H. Taylor Milling Co.	"	11·17	3·49	14·44	4·62	3·94	62·34	40215
" 18	"	40216	James Scott & Co., 132 St. Antoine St., Montreal.	5 "	10		"	10·37	3·83	14·44	4·87	3·48	63·01	40216
" 21	"	40217	W. Lamarre & Co., Atwater Ave., Montreal.	5 "			"	10·75	5·40	15·12	6·87	4·78	57·08	40217
" 26	"	40218	McDonald & Robb, Valleyfield, P.Q.	5 "		Vendors	"	11·86	3·91	16·18	4·65	3·74	59·66	40218
" 27	"	40219	J. P. Lebel, 67 Commissioners, Montreal.	5 "	10		"	10·81	5·32	16·25	6·66	4·00	56·96	40219
" 27	"	40220	E. Benoit fils, 181 St. Paul St., Montreal.	5 "	10	Ogilvie Flour Milling Co. Ltd.	"	10·49	4·32	13·00	9·92	3·64	58·63	40220
June 3	"	40221	B. Vaillancourt, 1195 St. Lawrence B., Montreal.	5 "	10		"	11·46	5·68	16·56	5·77	3·90	56·63	40221
May 14	"	40222	Bruneau Currie & Co., Youville Place, Montreal.	5 "		Geo. McCulloch & Son.	Middlings	10·86	1·28	13·63	1·82	1·80	70·61	40222
" 14	"	40223	F. X. Benoit fils, 71 Commissioners, Montreal.	5 "	10		"	9·95	3·50	18·00	3·45	3·40	61·70	40223
" 17	"	40224	W. L. Hogg, 1571 Notre Dame St. E., Montreal.	5 "	10		"	12·08	0·97	13·56	0·69	1·30	71·40	40224
" 21	"	40225	C. Campbell & Co., 731 Charlevoire St., Montreal.	5 "	10		"	11·80	3·02	15·81	6·76	4·60	58·01	40225
" 27	"	40226	J. P. Lebel, 67 Commissioners St., Montreal.	5 "	10		"	10·24	2·41	13·87	1·12	1·90	70·46	40226
" 27	"	40227	E. Benoit et fils, 181 St. Paul St., Montreal.	5 "	10		"	10·99	3·65	16·19	6·60	3·80	58·77	40227
June 9	"	40228	Gustave Labelle & Co., 1100 Dorchester St., Montreal.	5 "	10		"	9·73	5·41	16·00	7·46	4·18	57·22	40228

"	9	"	..	40229	A. Guertin, 8 Mountain St., Montreal.	5	"	..	10	... .	"	11·53	4·01	15·69	6·67	3·94	58·16	40229
May	14	"	..	40232	James McDonnell, 128 Wellington St., Montreal.	5	"	..	15	.....	Chop feed.....	10·00	4·29	10 00	10·62	3·40	61·37	40232
"	14	"	..	40233	Bruneau, Currie & Co., Youville Place, Montreal.	5	"	..	15	McDonald & Robb, Valleyfield P.Q.	"	9·85	2·15	16·19	7·05	3·40	61·69	40233
"	14	"	..	40234	F. X. Benoit et fils, 71 Commissioners St., Montreal.	5	"	..	10	.....	"	10·87	2·05	12·63	9·43	3·44	61·58	40234
"	17	"	..	40235	W. L. Hogg, 1571 Notre Dame St., Montreal.	5	"	..	10	Vendor	"	10·08	4·22	9 63	8·81	3·34	63·92	40235
"	18	"	..	40236	James Scott & Co., 132 St. Antoine St., Montreal.	5	"	..	10	.....	"	9·92	2·73	10·94	9·89	3·32	63·20	40236
"	21	"	..	40237	C. Campbell & Co., 731 Charlevois St., Montreal.	5	"	..	10	W. Lamarre & Co., Montreal.	"	10·81	3·43	10 31	11·87	3·54	60·01	40237
"	21	"	..	40238	W. Lamarre & Co., Montreal.	5	"	..	..	.....	"	9·78	3·11	10·75	10·06	2·90	63·40	40238
"	21	"	..	40239	The Canada Grain & Feed Co., 409 Cadieux Street, Montreal.	5	"	..	10	....	"	10·16	3·96	11·00	12·25	4 10	58·53	40239
"	26	"	..	40240	McDonald & Robb, Valleyfield P.Q.	5	"	..	..	Vendor	"	11·85	3·02	13·62	6·08	2·26	63·17	40240
"	27	"	..	41241	J. P. Lebel, 67 Commissioners St., Montreal.	5	"	..	10	.....	"	10·01	7·36	12·31	4·64	2·24	63·44	40241

DISTRICT OF OTTAWA, J. A. RICKEY, INSPECTOR.

May	21	Stock feeds...		41201	G. D. Atkinson, Cornwall..	5	lbs.		5	Vendor	Bran..... ..	10·53	3·05	15·13	7·88	5·44	57·97	41201
"	21	"	..	41202	Tilton & Graham, Cornwall.	5	"	..	5	Hunt Bros., London, Ont..	"	10·49	5·46	14·88	8·34	5·21	55·59	41202
"	21	"	..	41203	J. G. Broderick, Cornwall.	5	"	..	5	Campbell Milling Co., Toronto Junction.....	"	11·49	3·29	15·56	8·94	5·40	55·32	41203
"	22	"	..	41204	The Pembroke Milling Co., Pembroke.	5	"	..	5	Vendors.....	"	9·85	2·30	15·38	12·30	5 90	54·27	41204
"	22	"	..	41205	J. W. Montgomery, Pembroke.	5	"	..	5	Ogilvie Milling Co., Winnipeg.	"	10·36	2·22	14 25	11·17	5·64	56·36	41205
"	29	"	..	41206	C. Whitney & Son, Prescott.	5	"	..	5	" " "	"	10·87	3·64	14·19	9·04	5·74	56·52	41206
"	29	"	..	41207	J. Mayberry & Co., Prescott.	5	"	..	5	Lake of the Woods Milling Co., Montreal.	"	9·50	4·70	14·94	11·65	5·84	53·37	41207
"	29	"	..	41208	J. Dubrule & Co., Prescott.	5	lbs..		5	Lake of the Woods Milling Co., Keewatin.	"	10·04	3·41	14·44	8·89	5·34	57·88	41208
June	5	"	..	41209	W. H. Poole, Smith's Falls.	5	"	..	5	" " ..	"	10·98	3·09	14·38	9·78	5·04	56·73	41209
"	5	"	..	41210	A. May, Smith's Falls.....	5	"	..	5	Ogilvie Milling Co., Montreal.	"	9·40	4·30	14·50	10·90	6·00	54·90	41210
May	18	"	..	41211	Brown Bros., Richmond	5	"	..	5	Lake of the Woods Co., Montreal.	Shorts.....	9·83	4·26	16·38	4 78	4·74	60·01	41211

TABLE I—STOCK FEEDS.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost: Quantity.	Cost: Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion.)	Results of Analysis: Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference	Number of Sample
			DISTRICT OF OTTAWA—*Concluded.*					p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	
1909.														
May 21	Stock feeds.	41212	Tilton & Graham, Cornwall.	5 lbs.	5	Lake of the Woods Co., Keewatin.	Shorts.....	9·87	5·11	17·00	6·30	4·20	57·52	41212
" 21	" ..	41213	J. P. Broderick, Cornwall ..	5 " ..	5	Campbell Milling Co., Toronto Junction.	"	10·35	3·63	15·13	4·45	3·24	63·20	41213
" 22	" ..	41214	Jno. P. Millar, Pembroke..	5 " ..	5	Quaker Oats Co., Peterboro	"	10·51	4·61	16·25	5·64	3·60	59·39	41214
" 22	" ..	41215	Pembroke Milling Co., Pembroke.	5 " ..	5	Vendors	"	10·90	4·15	16·25	3·47	3·60	61·63	41215
" 22	" ..	41216	J. W. Montgomery, Pembroke.	5 " ..	5	Ogilvie Milling Co., Winnipeg.	"	9·63	4·20	16·88	6·50	4·16	58·63	41216
" 29	" ..	41217	C. Whitney & Son, Prescott	5 " ..	5	" " ..	"	9·55	4·25	16·88	6·15	4·44	58·73	41217
" 29	" ..	41218	J. Mayberry & Co., Prescott	5 " ..	5	Lake of the Woods Milling Co., Winnipeg.	"	9·40	3·75	17·00	5·25	4·14	60·46	41218
" 29	" ..	41219	J. Dubrule & Co.. Prescott .	5 " .	5	Quaker Oats Co., Peterboro	"	9·00	3·60	15·94	5·00	3·50	62·96	41219
" 29	" ..	41220	" "	5 " ..	5	Ogilvie Milling Co., Winnipeg.	"	11·59	4·65	15·94	7·51	3·90	56·41	41220
" 21	" ..	41221	G. D. Atkinson, Cornwall .	5 " ..	5	Vendor..	Middlings..	10·10	2·50	14·94	2·25	3·10	67·11	41221
" 21	" ..	41222	Tilton & Graham, Cornwall.	5 " ..	5	Hunt Bros., London, Ont ..	"	11·19	4·09	16·13	4·39	3·31	60·86	41222
June 2	" .	41223	G. W. McKay, Ottawa.....	5 " ..	5	Lake of the Woods Milling Co., Keewatin.	"	10·61	4·92	17·31	1·11	4·00	62·05	41223
" 2	" .	41224	" "	5 " ..	5	Maple Leaf Milling Co., Kenora, Ont.	"	10·56	2·70	15·75	5·13	3·26	62·60	41224
" 2	" ..	41225	J. S. Martin, Ottawa.	5 " ..	10	Lake of the Woods Milling Co., Keewatin.	"	10·86	2·42	15·56	2·27	2·10	66·79	41225
" 5	" ..	41226	Woods Milling Co., Smith's Falls.	5 " ..	5	Vendors.....	" ...	9·40	3·00	14·14	2·30	1·70	63·16	41226

"	12	"	..	41227	James McDougall, Brockville.	5	"	..	10	Hunt Bros., London, Ont ..	"	.....	9·35	3·50	15·06	4·80	4·00	63·29	41227
"	12	"	.	41228	H. Brown & Sons, Brockville	5	"	..	8	Vendors	Feed flour, formerly sold as Middlings.		10·60	3·24	14·81	0·70	1·54	69·11	41228
"	12	"	..	41229	A. E. Cameron, Brockville .	5	"	..	8	Ogilvie Milling Co., Fort William.	"	" .	10·72	0·95	12·88	0·22	3·40	71·83	41229
"	16	"	..	41230	H. Pullan, Ottawa.	4	"	..	5	Unknown.	Middlings.... ..		11·67	1·15	13·13	0·95	0·78	72·32	41230
May	18	"	..	41231	Brown Bros., Richmond, Ont.	5	"	.	5	Lake of the Woods Milling Co.	Chop feed (Moulcé) (wheat)		11·60	3·10	15·31	4·58	4·80	60·61	41231
"	21	"	..	41232	G. D. Atkinson, Cornwall..	5	"	.	5	Vendor.....	Chop feed (Moulcé)		11·05	1·28	10·41	9·90	2·64	64·69	41232
"	21	"	..	41233	J. P. Broderick, Cornwall	5	"	.	5	Campbell Milling Co., Toronto Junction.	"	..	10·61	2·83	11·75	5·89	2·84	66·08	41233
"	22	"	..	41234	Pembroke Milling Co., Pembroke.	5	"	.	5	Vendor.....	"	..	10·15	3·10	15·31	10·55	3·00	57·59	41234
"	22	"	..	41235	W. A. Hunter & Son, Pembroke.	5	"	.	5	Unknown	"	..	9·75	2·15	12·19	9·95	3·30	62·66	41235
"	22	"	..	41236	J. W. Montgomery, Pembroke.	5	"	.	5	Ogilvie Milling Co.....	"	.	9·85	3·80	15·31	5·90	4·50	60·64	41236
June	2	"	..	41237	Ed. St. Germain, Ottawa...	5	"	.	8	Quaker Oats Co., Peterboro.	Chop feed (wheat)		8·70	2·10	6·75	12·80	4·30	65·35	41237
"	2	"	..	41238	L. O. Joly, Ottawa.....	5	"	.	8	" " ..	Chop feed (Moulcé)		10·54	3·22	7·50	13·51	4·20	61·03	41238
"	2	"	..	41239	J. S. Martin, Ottawa. ...	5	"	.	10	" " ..	"	..	9·20	2·10	7·44	13·85	4·24	63·17	41239
"	5	"	..	41240	Woods Milling Co., Smith's Falls.	5	"	.	10	Vendors.....	"	..	8·75	3·40	11·38	10·15	3·10	63·22	41240

DISTRICT OF KINGSTON—JAS. HOGAN, INSPECTOR.

May	3	Stock feeds...		41101	W. P. Peters, Kingston. ..	5	lbs.	10	Lake of the Woods Milling Co.	Bran		10·68	5·55	14·38	9·42	5·50	54·47	41101
"	3	"	..	41102	J. A. McFarlane, Kingston.	5	"	. 10	" "	"		10·57	4·83	15·31	8·55	5·44	55·30	41102
"	3	"	..	41103	Kingston Milling Co., Kingston.	5	"	. 10	Vendors..... ..	"		10·71	4·47	13·06	10·22	5·50	56·04	41103
"	4	"	..	41104	C. Rathman, Belleville.....	5	"	. 10	Ogilvie Milling Co., Montreal.	"		10·82	4·91	14·00	10·08	6·26	53·93	41104
"	4	"	.	41105	H. E. Fairfield, Belleville.	5	"	. 10	Quaker Oats Co., Peterboro.	"		11·22	4·33	15·25	7·92	5·48	55·80	41105
"	5	"	..	41106	E. A. Duncan, Cobourg ...	5	"	. 10	Lake of the Woods.....	"		8·60	4·45	15·31	10·55	5·40	55·69	41106
"	5	"	..	41107	Thompson & MacDonald, Cobourg.	5	"	. 10	"	"		10·93	3·06	15·25	8·72	5·24	56·80	41107
"	6	"	..	41108	Roland Denne, Peterboro...	5	"	. 10	Quaker Oats Co., Peterboro	"		10·64	3·74	15·06	8·90	5·96	55·64	41108
"	6	"	..	41109	Central Milling Company, Peterboro.	5	"	. 10	Vendors.	"		11·14	4·39	13·06	10·04	6·88	54·49	41109

TABLE I—STOCK FEEDS.

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DISTRICT OF KINGSTON—*Continued.*														
1909.								p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
May 6	Stock feeds	41110	H. Handrey, Peterboro	5 lbs.	10	Central Milling Co., Peterboro.	Bran	9·75	3·75	12·69	11·55	6·50	55·76	41110
" 3	"	41111	W. P. Peters, Kingston	5 "	10	Lake of the Woods M. Co.	Shorts	10·52	5·23	16·81	6·20	4·24	57·00	41111
" 3	"	41112	J. A. McFarlane, Kingston.	5 "	10	Wasts Canada Milling Co.	"	10·14	4·60	16·18	5·35	3·80	59·93	41112
" 3	"	41113	Kingston Milling Co., Kingston.	5 "	10	Vendors	"	9·97	3·95	16·38	5·26	3·70	60·74	41113
" 3	"	41114	D. Hutchison, Kingston	5 "	10	Seaforth Milling Co	"	11·00	4·59	14·50	6·08	4·40	59·43	41114
" 4	"	41115	C. Rathman, Belleville	5 "	8	Ogilvie Milling Co., Montreal.	"	11·21	4·52	16·19	5·25	3·90	58·93	41115
" 4	"	41116	H. E. Fairfield, Belleville	5 "	10	Lake of the Woods Milling Co.	"	10·51	4·26	14·50	9·48	4·28	56·97	41116
" 6	"	41117	R. Denne, Peterboro',	5 "	10	Quaker Oats Co., Peterboro'.	"	10·08	4·81	16·06	5·75	3·90	59·40	41117
" 6	"	41118	Central Milling Co., Peterboro'.	5 "	10	Vendors	"	10·83	3·93	14·81	6·01	4·36	60·06	41118
" 6	"	41119	J. H. Savigny, Peterboro'.	5 "	10	Central Milling Co., Peterboro'.	"	10·99	3·36	14·25	4·98	3·66	62·76	41119
" 6	"	41120	Quaker Oats Co., Peterboro'.	5 "	10	Vendors	"	9·89	4·70	16·44	4·88	3·80	60·29	41120
" 3	"	41121	W. P. Peters, Kingston	5 "	10	Lake of the Woods Milling Co.	Middlings	11·48	1·75	14·69	1·04	1·40	69·64	41121
" 3	"	41122	J. A. McFarlane, Kingston.	5 "	10	Wasts Canada Milling Co.	"	10·25	4·40	15·56	5·90	3·62	60·27	41122
" 3	"	41123	D. Hutchison, "	5 "	10	Ogilvie Milling Co., Montreal.	" Nest brand.	10·35	3·63	16·25	4·45	3·90	61·42	41123
" 4	"	41124	C. Rathman, Belleville	5 "	10	" "	Middlings	10·14	4·99	17·50	4·59	3·64	59·14	41124
" 4	"	41125	A. Baker, Picton	5 "	10	A. Baker Milling Co.	Shorts	10·32	5·22	16·44	5·18	3·74	59·10	41125

"	5	"	..	41126	E. A. Duncan, Cobourg....	5	"	10	Ogilvies, Montreal.....	"	....	10 13	4·87	16·44	5·35	4·10	59·11	41126
"	5	"	..	41127	Thompson & McDonald, Cobourg.	5	"	10	Ogilvie Milling Co., Montreal.	"	.....	10 16	5·16	16 41	7·40	3·80	57·04	41127
"	6	"	..	41128	Central Milling Co., Peterboro'.	5	"	10	Vendors	"	.....	11 02	4·17	14·81	5·75	4·20	60 05	41128
"	6	"	..	41129	H. Handrey, Peterboro'....	5	"	10	Lakefield Milling Co.....	"	. .....	9·65	4·55	14·25	8 60	3·68	59·27	41129
"	6	"	..	41130	C. N. Brown, Peterboro'...	5	"	10	Central Milling Co.....	"	. .....	9·70	4·30	15·50	9 10	4·04	57·36	41130
"	3	"	..	41131	W. P. Peters, Kingston ...	5	"	10	Quaker Oats Co., Peterboro'.	Chop feed.....		10·56	3·82	10 44	10·32	3·10	61·76	41131
"	3	"	..	41132	J. A. McFarlane, Kingston.	5	"	10	" " ..	"	.....	10·79	2·78	9·00	8·46	2·92	66·05	41132
"	3	"	..	41133	Kingston Milling Co., Kingston.	5	"	10	Vendors.....	"	.....	10·50	3·33	10 69	11 05	3·64	60·79	41133
"	4	"	..	41134	C. Rathman, Belleville....	5	"	10	B. Cooper, Belleville..	"	.... .	10·41	3·99	10·75	10·52	3·10	61·23	41134
"	4	"	..	41135	H. E. Fairfield, Belleville..	5	"	10	Vendor	"	.....	10·01	3 09	10 69	10·53	3·54	62·14	41135
"	4	"	..	41136	A. Baker, Picton.....	5	"	10	A. Baker Milling Co.....	"	.....	10·51	2·33	10 06	9·33	3·36	61·41	41136
"	5	"	..	41137	E. A. Duncan, Cobourg....	5	"	15	A. Pratt, Cobourg.....	"	....	11·53	3·94	12·06	3·18	1·88	67·41	41137
"	5	"	..	41138	Thompson & McDonald, Cobourg.	5	"	10	Vendors.....	"	....	10·24	2·91	10 69	10·93	3·30	61·90	41138
"	6	"	..	41139	R. Denne, Peterboro.....	5	"	10	"	"	....	9·80	3·20	10 13	13·55	3·40	59·92	41139
"	6	"	..	41140	Central Milling Co., Peterboro.	5	"	10	"	"	....	11·49	5·09	8·81	1·67	1·04	71·90	41140

DISTRICT OF TORONTO, H. J. DAGER, INSPECTOR.

May	4	Stock feeds...		36264	A. W. Maguire, Hamilton..	5	lbs.	10	Kerr Milling Co., Dundas..	Bran.		11·10	3·08	13 75	9·13	6·30	56·64	36264
"	4	"	..	36265	H. MacFarlane, " ..	5	"	15	Woods Milling Co, Hamilton.	"	.....	10 05	4·37	13·87	12·21	6·20	53·30	36265
"	6	"	..	36266	Riverside Milling Co., Welland.	5	"	7	Vendors.....	"	....	12·45	3·90	14·37	9·60	4·50	55·18	36266
"	6	"	..	36267	Hedley Milling Co., Thorold.	5	"	6	"	"	.....	11·20	3·85	14·00	10·95	4·60	55·40	36267
"	8	"	..	36268	W. Kearns & Co., Burlington.	5	"	7	Woods Milling Co., Brantford.	"	.....	11·51	3·47	13·50	8·73	5·54	64·25	36268
"	11	"	..	36269	J. Williams, 340 Queen St., Toronto.	5	"	12	Lake of the Woods Milling Co., Toronto.	"	.....	11·12	3·16	14·69	10·38	6·10	54·55	36269
"	12	"	..	36270	J. O. Gadsby, 241 Queen St., Toronto.	5	"	10	The Maple Leaf Flour Mills Co., Ltd., Kenora, Ont.	"	... .	11·39	3·95	16·00	8·48	5·10	55·08	36270
	13	"	..	36271	G. M. Wilson, 209 Dundas St. West, West Toronto.	5	"	5	The Campbell Milling Co., Ltd., West Toronto.	"	.....	9·80	4·40	14·94	8·00	4 90	57·96	36271

TABLE I—STOCK FEEDS.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion.)	Results of Analysis. Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference	Number of Sample.
DISTRICT OF TORONTO—*Concluded.*														
1909.								p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
May 18	Stock feeds...	36272	Jas. Reynolds, Aurora.....	5 lbs	10	J. Knox & Co., Staynor.	Bran.....	12·72	2·11	13·56	9·92	5·84	55·85	36272
" 18	" ..	36273	H. V. Denne & Co., New Market, Ont.	5 "	5	Vendors.....	"	12·47	1·93	13·43	10·84	5·64	55·69	36273
" 3	" ..	36274	Wm. Armstrong, Dundas..	5 "	10	Kerr Milling Co., Dundas..	Middlings.....	10·75	3·73	15·38	7·01	4·56	58·57	36274
" 4	" ..	36275	J. Smuck, 270 Victoria Ave., Hamilton.	5 "	10	Woods Milling Co., Hamilton.	"	8·95	2·35	15·81	5·85	4·40	62·64	36275
" 4	" .	36276	A. W. Swazie, 647 Barton St., Hamilton.	5 "	10	" " ..	"	10·89	4·43	15·56	4·87	4·94	59·31	36276
" 6	" .	36277	W. D. Davidson, 259 St. Paul St., St. Catharines.	5 "	10	Hedley Shaw Milling Co., St. Catharines.	"	10·26	5·02	15·75	5·96	3·90	59·11	36277
" 8	" ..	36278	J. F. Campbell, Burlington.	5 "	10	Woods Milling Co., Hamilton.	"	11·30	4·87	16·19	4·82	3·68	59·14	36278
" 13	" ..	36279	Wm. Willoughby, 186 Dundas St. West, W. Toronto.	5 "	10	West. Canada Milling Co., Ltd., Toronto.	"	10·78	4·29	16·38	5·55	4·00	59·00	36279
" 13	" ..	36280	M. Austin, 500-502 Dundas St. West, West Toronto.	5 "	7	Queen City Flour Mills Co., Ltd., Toronto.	"	11·45	4·85	15·68	6·07	3·88	58·07	36280
" 17	" ..	36281	Estate of H. Wilson, Oakville.	5 "	8	T. H. Ashbury & Sons, Oakville.	"	11·16	4·71	14·28	5·72	4·00	60·13	36281
" 18	" ..	36282	W. H. Eves, Newmarket...	5 "	8	F. H. Robinson, Glenville..	"	11·56	3·22	13·13	1·42	2·36	68·31	36282
" 20	" ..	36283	R. H. Beaty, 1103 Yonge St., Toronto.	5 "	8	The Alex. Brown Milling Co., Ltd., Toronto.	"	10·92	6·83	15·25	5·75	4·34	56·91	36283
" 3	" ..	36284	E. Miller, Dundas	5 "	8	R. A. Thompson, Lynden..	Shorts	10·34	3·30	14·50	5·18	4·38	62·30	36284
" 4	" ..	36285	J. A. Clark, 444 York St., Hamilton.	5 "	10	Woods Milling Co., Hamilton.	"	10·38	4·97	15·38	4·80	4·04	60·43	36285
" 5	" ..	36286	W. H. Wodehouse, 28 John St. South, Hamilton.	5 "	10	Kerr Milling Co., Dundas..	"	8·70	4·15	14·91	8·55	4·50	59·16	36286
" 6	" ..	36287	A. McClenchy, Thorold ...	5 "	7	Hedley Shaw Milling Co., Thorold.	"	10·18	4·74	16·81	5·10	3·90	59·27	36287

"	7	"	..	36288	J. K. Black, 23 James St., St. Catharines.	5	" ..	7	" " ..	"	10·86	4·72	15·75	5·89	3 88	58 9)	36288
"	7	"	..	36289	J. Black & Son, 2 Race St., St. Catharines.	5	" ..	10	Vendors.....	"	10·85	3·20	15·06	4·29	3·64	62·96	36289
"	12	"	..	36290	J. W. McDonald, 433 Queen St. E., Toronto.	5	" ..	5	The Campbell Milling Co., West Toronto.	"	11·70	4·89	15·81	5·30	3·96	58·34	36290
"	12	"	..	36291	J. White, 682 Queen St. E., Toronto.	5	" ..	7	The Tillson Co., Ltd., Tillsonburg.	"	10·34	6·12	17·12	5·34	4·06	57·02	36291
"	13	"	..	36292	Alexander Brown, Milling & Elevator Co., Ltd., Toronto	5	" ..	5	Vendors.....	"	11·22	5·68	15·81	7·51	4·08	55·70	36292
"	18	"	..	36293	Stiver Bros., Aurora.....	5	" ..	10	Quaker Oats Co., Peterboro.	"	11·72	5·24	15·81	6·13	3·86	57·24	36293
"	17	"	..	36299	T. H. Ashbury & Sons, Oakville.	5	" ..	8	Vendors.....	Chop feed	12·00	2·75	10·94	6·48	2·70	65·13	36299
"	18	"	..	36300	Aurora Flouring Mills, Aurora.	5	" ..	10	"	"	10·99	2·12	7·69	11·45	3·34	64·41	36300
"	4	"	..	41301	H. W. Fair, Crown Point, Hamilton.	5	" ..	10	Vendor	"	10·05	4·45	10·00	12·50	2·84	60·16	41301
"	4	"	..	41302	W. Pringle & Son, 280 York St., Hamilton.	5	" ..	8	Caledonia Milling Co., Caledonia.	"	8·95	2·35	11·63	5·25	2·60	69·22	41302
"	5	"	..	41303	J. Penfold, 96 John St. South, Hamilton.	5	" ..	10	The Quaker Oats Co., Peterboro.	"	10·49	3·64	7·38	9·86	3·48	65·15	41303
"	5	"	..	41304	Jas. Dunlop & Co., Ltd., 127 John St. South, Hamilton	5	" ..	10	Vendors.....	"	10·35	2·40	10·50	9·00	2·60	65·15	41304
"	7	"	..	41305	Lewis Moyer, 59 King St., St. Catharines.	5	" ..	5	The McCann Knox Milling Co., Toronto.	"	6·85	3·72	8·68	10·60	3·46	66·69	41305
"	12	"	..	41306	The Chalmers Milling Co., East Toronto.	5	" ..	10	Vendors.....	"	9·40	3·00	10·25	10·50	2·82	64·03	41306
"	14	"	..	42307	The Watt Milling and Feed Co., Ltd., 211 Royce Ave., Toronto.	5	" ..	10	"	"	9·15	2·75	10·56	10·25	3·40	63·89	41307
"	14	"	..	41308	The Campbell Milling Co., Ltd., West Toronto.	5	" ..	6	"	" . . .	10·51	4·07	12 06	7 13	3·44	62·79	41308

DISTRICT OF LONDON—T. KIDD, INSPECTOR.

May	6	Stock feeds..	..	30650	Vivian & Co., Goderich	3	lbs.	5	Western Canada Flour Mills Co., Goderich.	Shorts....	9·55	5·00	16·69	4·55	4·10	60·11	30650
"	7	"	..	30651	" "	3	" ..	5	" " ..	Bran.	10·58	2·89	15·06	10·02	5·60	55·85	30651
"	7	"	..	30652	Joseph Stothers, Blythe ...	3	" ..	5	Ogilvie & Co., Winnipeg....	Shorts	10·66	3·65	14·44	4·40	3·88	62·97	30652
"	7	"	..	30653	" "	3	" ..	5	Quaker Oats Co., Peterboro.	Cattle feed.	10·75	1·80	9·88	5·60	1·96	70·01	30653
"	7	"	..	30654	T. A. Mills, Wingham.....	3	" ..	5	Wallaceburgh Sugar Beet Co. Wallaceburgh.	Sugar beet pulp.	9·60	2·55	8·25	14·95	2·84	61·81	30654
"	7	"	..	30655	R. Awde, Wingham.....	3	" ..	5	Pepper Bros., Milverton....	Shorts..	9·61	5·20	15·69	5·17	4·04	60·29	30655
"	7	"	..	30656	" "	3	" ..	5	Ogilvie & Co., Winnipeg....	Bran.	10·16	3·59	14·81	9·18	5·40	56·86	30656

TABLE I—STOCK FEEDS.

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				Quantity.	Cents.			Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference	
DISTRICT OF LONDON—*Concluded.*														
1909.								p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	
May 7	Stock feeds...	30657	J. H. McDonald.....	3 lbs..	5	Tillson & Co., Tillsonsburgh	Chop feed	8·10	2·85	15·31	5·90	6·80	61·04	30657
" 7	" ..	30658	Korotz & Co.....	3 " ..	5	Pfeffer Bros., Listowell.....	Shorts..	10·11	4·95	15·94	5·67	4·20	59·13	30658
" 7	" ..	30659	R. A. Chimie, Listowell....	3 " ..	5	" "	Bran.	10·49	4·01	14·62	9·36	5·72	55·80	30659
" 7	" ..	30660	" "	3 " ..	5	Ogilvie Milling Co., Winnipeg.	Shorts..... .. .	9·59	5·24	16·63	7·79	4·84	55·91	30660
8	" ..	30661	Steward Bros., Mitchell....	3 " ..	5	Vendors.....	"	11·39	2·49	14·19	7·94	5·14	58·85	30661
" 8	" ..	30662	" "	3 " ..	5	"	Bran.	10·10	3·96	14·69	3·96	3·16	64·13	30662
" 8	" ..	30663	R. A. Sproat, Seaforth.....	3 " ..	5	Tavistock Milling Co., Tavistock.	"	10·82	2·83	14·06	8·75	5·60	57·94	30663
" 8	" ..	30664	" "	3 " ..	5	" " ..	Shorts.....	11·36	5·76	14·68	6·62	4·68	56·90	30664
" 10	" ..	30665	Seaforth Milling Co., Seaforth.	3 " ..	5	Vendors.....	"	11·09	4·27	14·06	5·11	3·96	61·51	30665
" 10	" ..	30666	W. E. Kearslake.	3 " ..	5	Seaforth Milling Co., Seaforth.	Bran..... .	10·86	3·01	11·81	13·20	5·80	55·32	30666
" 10	" ..	30667	Seaforth Milling Co., Seaforth.	3 " ..	5	Vendors.....	"	9·60	4·25	14·63	8·55	5·80	57·17	30667
" 10	" ..	30668	" " ..	3 " ..	5	"	Corn chop.....	11·02	3·09	10·00	2·85	1·44	71·60	30668
" 10	" ..	30669	" " ..	3 " ..	5	"	Shorts..	10·36	4·63	18·93	5·19	5·74	55·15	30669
" 11	" ..	30670	George Young, Guelph.....	3 " .	5	Vendor.....	Chop.....	12·58	2·62	10·56	6·83	2·30	65·11	30670
" 11	" ..	30671	James Hewer & Son, Guelph	3 " ..	5	Lake of the Woods Milling Co., Lake of the Woods.	Bran.	11·49	5·10	13·94	9·43	6·74	53·30	30671
" 11	" ..	30672	" " ..	3 " ..	5	"	Shorts..	11·50	4·98	16·18	5·71	3·90	57·73	30672

"	11	"	..	30673	James Hewer & Son, Guelph	3 lbs.	5	Lake of the Woods Milling Co., Lake of the Woods.	Corn chop.	11·84	4·77	9·00	1·44	1·60	71·35	30673
"	11	"	..	30674	W. F. Stewart, Guelph.	5 "	5	Western Canada Flour Mills Co.	Bran	9·22	3·00	14·19	8·15	6·00	59·31	30674
"	11	"	..	30675	W. F. Stewart & Son. Guelph.	5 "	5	" "	Shorts	10·38	4·95	17·00	5·12	3·90	58·65	30675
"	11	"	..	30676	" "	5 "	5	" "	Chop	10·91	2·95	10·25	6·46	2·80	66·60	30676
"	12	"	..	30679	W. B. Doughty, Guelph.	3 "	10	Vendor	"	10·45	2·70	10·50	9·80	3·14	63·41	30679
"	13	"	..	30680	A. K. Morrison, Stratford.	3 "	5	Quaker Oats Co., Peterboro.	"	10·90	2·31	9·63	10·17	3·40	63·59	30680
"	13	"	..	30682	John Byrs, Stratford.	4 "	10	McLeoud Milling Co., Stratford.	"	12·67	2·98	8·81	1·21	1·40	72·93	30682

DISTRICT OF WINDSOR, JOHN TALBOT, INSPECTOR.

April	28	Stock feeds	..	35921	Geo. Leith, London, Ont.	5 lbs.	5	Dexter & Son, London, Ont.	Bran	9·88	4·71	15·12	10·33	6·20	53·76	35921
"	28	"	..	35922	A. Wray, 874 Dundas St., London, Ont.	5 "	10	Hawkins, St. Johns, Ont.	Shorts	9·80	5·25	15·25	5·18	3·96	60·56	35922
"	28	"	..	35923	H. English, 1006 Dundas St., London, Ont.	5 "	10	Marshall & Twitchen	"	10·27	4·61	15·31	4·37	3·76	61·68	35923
"	28	"	..	35924	J. A. Tucker, 342 Egerton St., London, Ont.	5 "	10	Hunt Bros., London	Bran	10·22	4·86	15·75	8·91	5·80	54·46	35924
"	28	"	..	35925	J. J. Alexander, Egerton St., London, Ont.	5 "	10	G. Leith, London	Shorts	10·24	5·41	16·68	5·18	3·76	58·73	35925
"	28	"	..	35926	C. W. Summers, 577 Hamilton Road, London, Ont.	5 "	10	Hunt Bros., London	Bran	10·11	4·16	14·91	9·38	5·24	56·17	35926
"	28	"	..	35927	Tupholme & Son, 541 Hamilton Road, London, Ont.	5 "	10	Geo. Leith, London	Shorts	9·55	4·15	16·88	8·25	4·00	57·17	35927
"	28	"	..	35928	McFarlane & Co., 412 Hamilcon Road, London, Ont.	5 "	10	Hunt Bros., London	"	10·03	5·16	16·05	5·00	3·80	59·96	35928
"	28	"	..	35929	E. H. Walker, 318½ Hamilton Road, London, Ont.	5 "	10	T. H. Taylor & Co., Chatham	Middlings	10·32	3·92	14·44	5·93	4·14	51·25	35929
"	30	"	..	35930	Rowntree & Fouger, 469 Grey St. London, Ont.	5 "	10	J. Sutherland, London	Chop feed	10·06	2·86	11·00	13·30	3·40	59·38	35930
"	30	"	..	35931	John Tanton & Son, 143 York St., London, Ont.	5 "	10	Ogilvie Milling Co., Montreal.	Bran	10·91	4·83	13·63	10·02	6·50	54·11	35931
"	30	"	..	35932	R. Hookway, 139 King St., London, Ont.	5 "	10	Hamlyn, Lambeth	Chop corn	11·67	4·22	10·31	1·47	1·40	70·93	35932
"	30	"	..	35933	Adams & Tanton, 115 King St., London, Ont.	5 "	10	Hunt Bros., London	Middlings	10·60	2·92	13·50	0·67	1·34	61·97	35933
"	30	"	..	35934	A. M. Hamilton & Son, 373 Talbot St., London, Ont.	5 "	10	Woodburn Milling Co., Glencoe, Ont.	"	10·78	2·78	12·06	1·00	1·00	72·38	35934
"	30	"	..	35935	Marshall & Twitchen, 398 Talbot St., London, Ont.	5 "	10	J. D. Sannby, London	Chop feed	11·57	3·06	11·25	11·58	3·32	59·22	35935
"	30	"	..	35936	C. F. Reid, 400 Talbot St., London.	5 "	10	Hunt Bros., London	Middlings	11·20	1·22	13·13	0·54	1·10	72·81	35936

TABLE I—STOCK FEEDS.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis. Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference	Number of Sample.
			DISTRICT OF WINDSOR—*Concluded.*											
1909								p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
May 3	Stock feeds	35937	H. Hamlyn, Lambeth	5 lbs.	10	H. Hamlyn, London	Shorts	10·60	3·00	14·50	6·90	2·80	62·20	35937
" 3	"	35938	"	5 "	10	" "	Bran	10·89	3·41	14·62	9·87	6·20	55·01	35938
" 5	"	35939	J. Campbell Milling Co., St. Thomas.	3 bags		Vendors	Chop feed	12·32	2·35	10·15	5·78	2·70	66·70	35939
" 5	"	35940	"	3 "		"	Corn chop	13·92	1·85	13·87	1·32	1·20	67·84	35940
" 5	"	35941	"	3 "		"	Corn feed	9·70	6·97	10·44	3·45	4·28	65·15	35941
" 5	"	35942	D. W. Newcombe, St. Thomas.	5 lbs.	10	Quaker Oats Co., Peterboro.	Chop feed	11·00	2·40	10·06	9·20	3·20	64·14	35942
" 5	"	35943	A. Sutherland	5 "	10	J. Campbell Milling Co., St. Thomas.	Middlings	9·99	4·50	15·31	5·84	2·24	62·12	35943
" 6	"	35944	B. L. Scott, Ingersoll	5 "	10	Unknown	"	9·20	4·90	13·56	6·60	3·90	61·84	35944
" 6	"	35945	Greive & Daniel, Ingersoll	5 "	10	"	"	10·55	4·29	14·68	5·42	4·24	60·82	35945
" 6	"	35946	H. Patrick, Ingersoll	5 "	10	Vendor	Chop feed	11·97	1·26	9.87	5·48	2·80	68·62	35946
" 6	"	35947	W. Hayes, Ingersoll	5 "	10	"	Oat chop	10·80	1·95	11·13	11·82	2·70	61·60	35947
" 7	"	35948	Geo. Kirk, Woodstock	5 "	10	Ogilvie Milling Co., Manitoba.	Shorts	9·35	4·70	15·56	9·75	4·30	56·34	35948
" 7	"	35949	A. Patrick, Woodstock	5 "	10	Western Canada Milling Co., Goderich.	Middlings	10·29	5·43	16·44	5·92	3·80	58·12	35949
" 7	"	35950	Geo. E. Phillips, Woodstock	5 "	10	James Cullen, Woodstock	Wheat Chops	11·34	2·73	14·00	2·58	2·94	66·41	35950
" 10	"	35951	Gardner Bros., Sarnia	5 "	10	Lake of the Woods Milling Co.	Shorts	10·75	5·63	17·00	5·20	4·20	57·42	35951
" 10	"	35952	Wm. Johnston, Sarnia	5 "	8	King Milling Co., Sarnia	Bran	11·94	3·42	13·75	9·35	5·86	55·68	35952

"	10	"	..	35953	J. A. Crouse, Sarnia	5	"	....	"	"	....	Middlings.....	10·80	3·47	15·31	5·00	4·40	61·02	35953
"	10	"	..	35954	Peter Clark, Sarnia	5	"	10	"	"	....	Shorts.....	13·56	3·42	15·12	4·73	3·34	59·83	35954
"	11	"	..	35955	R. M. Pincombe, Strathroy.	5	"	...	Taylor Milling Co., Chatham.	"	.....	10·90	5·47	17·31	4·75	4·00	57·57	35955
"	11	"	..	35956	"	"	..	5	"	....	Western Canada Milling Co., Goderich.	Bran*.	.....	.....	.....	.....	.....	.....	35956
"	11	"	..	35957	S. S. Donaldson, Strathroy.	5	"	..	Vendor.....			Middlings.....	10·25	3·80	12·62	1·00	1·30	71·03	35957
"	11	"	.	35958	"	"	..	5	"	...	"	Bran.	11·77	1·72	13·75	9·43	5·60	57·73	35958
"	11	"	..	35959	H. J. Glanville, London....	5	"	10	Mr. Hawkins, St. Johns....		"		11·07	3 61	14·44	9·87	5·64	55·37	35959

DISTRICT OF MANITOBA—A. C. LARIVIERE, INSPECTOR.

May	6	Stock feeds.	..	39701	Coyle Bros., North Winnipeg	5 lbs.	..	10	Lake of the Woods Milling Co., Keewatin.		Bran.		10·00	4·05	14·88	7 80	5·38	57·89	39701
"	6	"	..	39702	L. Ginsberg, Winnipeg ...	5	"	..	10	"	" ..	"		9·95	3·60	15·00	13·00	4·24	54·21	39702
"	8	"	..	39703	The Carnfac Stock Food Co., Winnipeg.	5	"	..	....	"	" ..	"		10·50	4·46	14·00	9·80	5·70	55·54	39703
"	10	"	..	39704	Callin Bros., St. Boniface ..	5	"	..	10	The Western Canada Flour Mills Co., St. Boniface.		"		10·92	3·67	14·81	9·99	5·74	54·87	39704
"	12	"	..	39705	Laing Bros., Winnipeg.....	5	"	..	10	"	" ..	"		11·00	4·33	14·94	9 16	5·64	54·93	39705
"	17	"	..	39706	Lake of the Woods Milling Co., Portage La Prairie.	5	"	..	....	Vendors...		"		10·84	3 06	13·50	10·39	6·06	56·15	39706
"	18	"	..	39707	R. Purdon..	5	"	..	10	The Western Canada Flour Mills Co., Brandon.		"		10·65	3·80	14·25	10·23	5·90	55·17	39707
"	18	"	..	39708	The Maple Leaf Flour Mills Co., Brandon.	5	"	..	....	Vendors.....		"		11·46	2·46	15·68	10·22	5·90	54·28	39708
"	20	"	..	39709	Geo. McCulloch & Sons, Souris.	5	"	..	....	"		"		11·72	5·34	15·06	9·37	4·88	53·63	39709
"	22	"	..	39710	W. Epstein, Selkirk.. ...	5	"	..	10	Lake of the Woods Milling Co., Keewatin.		"		10·56	3·16	14·81	11·53	5·98	53·96	39710
"	6	"	..	39711	Wm. Crawford, Elmwood, P.O., Winnipeg.	5	"	..	10	"	" ..	Shorts....		10·55	5·32	14·87	7·45	3·50	58·31	39711
"	7	"	..	39712	J. J. Darling, Winnipeg....	5	"	..	10	The Maple Leaf Flour Mills Co., Brandon.		"		10·07	4·41	16·00	6·80	4·40	58·32	39712
"	10	"	..	39713	Pelletier & Co., St. Boniface	5	"	..	10	The Western Canada Flour Mills Co., St. Boniface.		"		10·24	5·35	16·44	6·46	4·20	57·31	39713
"	12	"	..	39714	Lake of the Woods Milling Co., Winnipeg.	5	"	..	....	Vendors, Keewatin....		"		10·21	5·72	16·87	6·72	4·30	56·18	39714
"	17	"	..	39715	G. C. Hall, Portage La Prairie.	5	"	..	10	Lake of the Woods Milling Co., Portage La Prairie.		"		10·38	4 12	14·50	8·06	3·74	59 20	39715

*Sample lost.

TABLE I—STOCK FEEDS.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion).	Results of Analysis. Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference	Number of Sample.
DISTRICT OF MANITOBA—*Concluded.*														
1909.								p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
May 17	Stock feeds	39716	Shaws Flour & Feed, Portage La Prairie.	5 lbs.	10	The Western Canada Flour Mills Co., St. Boniface.	Shorts	9·83	4·42	16·25	6·38	4·18	58·94	39716
" 17	"	39717	Lake of the Woods Milling Co., Portage La Prairie.	5 "		Vendors	"	10·37	5·01	14·85	7·55	4·14	58·08	39717
" 18	"	39718	Rae & Co., Brandon	5 "	10	The Western Canada Flour Mills Co., Brandon.	"	11·09	3·40	15·75	5·02	3·88	60·86	39718
" 18	"	39719	The Maple Leaf Flour Mills Co., Brandon.	5 "		Vendors	"	11·62	3·08	16·81	5·67	4·08	56·74	39719
" 20	"	39720	Geo. McCulloch & Sons, Souris.	5 "		"	"	10·87	3·81	15·75	5·16	3·54	60·87	39720
" 6	"	39721	Laing Bros., Winnipeg	5 "	10	Unknown	Middlings	10·15	2·80	12·88	11·95	2·28	59·94	39721
" 7	"	39722	Olafson & Sveinson, Winnipeg.	5 "		The Western Canada Flour Mills Co., St. Boniface.	"	10·75	0·95	11·25	1·25	0·90	74·10	39722
" 10	"	39723	The West Canada Flour Mills Co., St. Boniface.	5 "		Vendors	"	10·44	5·93	16·69	5·61	4·14	57·19	39723
" 11	"	39724	Ogilvie Flour Mills Co., Winnipeg.	5 "		Vendors	"	8·35	3·50	16·38	7·35	3·90	60·52	39724
" 6	"	39731	Medovy & Levitt, Winnipeg.	5 "	10	"	Chop feed	10·50	2·90	10·50	7·90	2·48	65·72	39731
" 6	"	39732	Spratt Bros., Elmwood P.O., Winnipeg.	5 "	10	The West. Canada Flour Mills Co., St. Boniface.	"	3·05	4·50	11·75	12·20	2·60	65·90	39732
" 7	"	39733	A. & E. Currie, Winnipeg	5 "	10	The Anchor Elevator Co., Winnipeg.	"	10·05	4·12	13·67	12·21	2·34	57·61	39733
" 7	"	39734	P. Flodden & Co., Winnipeg.	5 "	10	Unknown	"	10·32	4·94	11·56	10·06	3·00	60·12	39734
" 7	"	39735	Raynsford & Co	5 "	10	Raynsford & Co., Grandview, Man.	"	10·60	2·45	11·31	8·65	2·56	64·43	39735
" 7	"	39736	Wilton Bros., Winnipeg	5 "	10	Vendors	"	10·40	3·83	10·31	12·26	3·34	59·86	39736
" 8	"	39737	Laing Bros., Winnipeg.	5 "	10	The West. Canada Flour Mills Co., St. Boniface.		10·25	3·85	10·50	10·10	3·10	62·20	39737

"	10	" ..	39738	The West. Canada Flour Mills Co., St. Boniface.	5	" .	10	Vendors.....	"	10·50	2·05	10·75	9·30	2·80	64 60	39738
"	11	" ..	39739	Ogilvie Flour Mills Co., Winnipeg.	5	" .	10	"	"	10·25	3 97	15·68	5·67	4·58	59·85	39739

DISTRICT OF CALGARY—R. W. FLETCHER, INSPECTOR.

May	21	Stock feeds..	35533	Erb & Anderson, Calgary ..	5	lbs.	10	Medicine Hat Milling Co., Medicine Hat.	Bran.....	10·17	2·30	16·63	9·16	4·40	57·34	35533
"	21	" ..	35534	Geater & Smith, Calgary...	5	" .	10	Lethbridge Roller Mill, Lethbridge.	"	8·70	4 40	17·56	7 30	5·24	56·80	35531
"	21	" ..	35535	T. Fletcher, Calgary.....	5	" .	10	West. Canada Flour Mills Co., Winnipeg.	"	10·65	2·54	14·69	10·02	5 94	56·16	35535
"	21	" ..	35536	Jesse Gouge, Calgary.....	5	" .	10	Western Milling Co., Calgary.	"	9·30	3·55	13·50	10·40	5·84	57·41	33536
"	26	" .	35537	J. E. Love, Calgary.....	5	" .	10	" " ..	"	9·85	2·50	13·75	10·00	5·00	58·90	35537
"	28	" ..	35538	S. T. Fawcett, Medicine Hat.	5	" .	10	Lake of the Woods Milling Co., Portage la Prairie.	"	9·45	4·00	15·50	10·15	5·70	55·20	35538
"	28	" ..	35539	Medicine Hat Milling Co., Medicine Hat.	5	" .	10	Vendors...	"	10 82	3·04	14·88	8·46	5·10	57·70	35539
June	1	" ..	35540	Hegler & Hegler, Edmonton.	5	" .	10	Campbell & Ottiwell, Edmonton.	"	10·20	3·58	14·63	8·48	4·50	58 61	35540
"	1	" ..	35541	Hamilton & Son, Edmonton.	5	" .	10	Alberta Milling Co., Edmonton.	"	8·05	3·70	13·19	7 15	5 44	62·47	35541
"	1	" ..	35542	" " .	5	" .	10	Campbell & Ottiwell, Edmonton.	"	9 15	3·00	14 00	8·40	5·00	60·45	35542
May	21	" ..	35543	Erb & Anderson, Calgary ..	5	" .	10	Medicine Hat Milling Co., Medicine Hat.	Shorts.....	9 90	4·20	16·38	6·10	3·44	59·98	35543
"	21	" ..	35544	Geater & Smith, Calgary...	5	" .	10	Taylor Mill & Elevator Co., Lethbridge.	"	9 60	3·70	16·41	6·45	3·38	60·43	35544
"	21	" ..	35545	T. Fletcher, Calgary.	5	" .	10	West. Canada Flour Mills Co., Winnipeg.	"	8·40	4·85	17·34	5·25	4·04	60 15	35545
"	21	" ..	35546	Jesse Gouge, Calgary..	5	" .	10	Western Milling Co., Calgary	"	10·76	2·75	14·88	4·28	3·36	63·97	35846
"	26	" ..	35547	J. E. Love "	5	" .	10	Lethbridge Milling Co., Lethbridge.	"	10·78	3·53	15·50	3 90	3·38	62·91	35547
"	28	" ..	35548	S. T. Fawcett, Med. Hat. .	5	" .	10	Calgary Milling Co., Calgary	" *..... ..	.....	....	.....	.....	.....	.. ...	35548
"	28	" ..	35549	Med. Hat Milling Co " .	5	" .	10	Vendors.....	"	10·15	3·87	15·56	4·21	3·34	62 87	35549
June	1	" ..	35550	Potter & McDougall, Edmonton.	5	" .	10	Alberta Milling Co., Edmonton.	"	10·88	3·45	15·38	3·89	2 94	63 71	35550
"	1	" ..	35551	Hegler & Hegler, Edmonton.	5	" .	10	Campbell & Ottiwell, Edmonton....	"	10·64	3·94	15·38	5·60	4 26	60 18	35551
"	1	" ..	35552	Antin & Markham "	5	" .	10	Alberta Milling Co., Edmonton.	"	9·40	4·25	14·81	5·65	3 14	62·75	35552
May	21	" .	35563	Erb & Anderson, Calgary ..	5	" .	10	Unknown.....	Barley chop.....	11·36	0 97	10 00	4 77	2 34	70·56	35563

*Sample lost.

TABLE I—STOCK FEEDS.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of Opinion.	Results of Analysis. Moisture.	Fat, (indirect.)	Proteids.	Crude Fibre.	Ash.	Difference	Number of Sample.
DISTRICT OF CALGARY—*Concluded.*								p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
1909.														
May 21	Stock feeds...	35564	Geater & Smith Galgary.	5 lbs..	10	Brackman & Ker. Calgary..	Oat chop ...	10·40	3·75	10·56	12·37	3·14	59·78	35564
" 21	" .	35565	T. Fletcher " ..	5 " ..	10	" "	" " ...	9·25	2·85	11·75	11·40	2·84	61 91	35565
" 21	" ..	35566	Jesse Gouge " ..	5 " ..	10	Vendors.	" " ...	10·31	4·39	9 63	11·49	3·34	60·84	35566
" 26	" ..	35567	J. E. Love " ..	5 " ..	10	Brakman & Kerr Milling Co., Calgary.	Barley " ...	11·40	1·00	11·81	4 75	2·18	68·86	35567
" 28	" ..	35568	Med. Hat Milling Co., Med. Hat.	5 " ..	10	Vendors.....	Oat " ...	10·48	4·33	11·75	9 00	3·00	61·44	35568
" 28	" ..	35569	S. T Fawcett, Med. Hat ...	5 " ..	10	"	Barley " ...	11·07	3·67	11·00	5·96	2·56	65·74	35569
June 1	" ..	35570	Potter & McDougall, Edmonton.	5 " ..	10	"	Flaked oats.. ..	11·12	3·77	11·13	11·00	3·10	59·88	35570
" 1	" ..	35571	Hegler & Hegler, Edmonton.	5 " ..	10	"	Barley chop.. ..	11·20	0·98	10·13	5·22	2·41	70 03	35571
" 1	" ..	35572	Antin & Markham "	5 " ..	10	"	Oat " ...	9·25	3·35	10·50	8·45	3·20	65·25	35572
DISTRICT OF VANCOUVER—J. F. POWER, INSPECTOR.														
April 29	Stock feed...	37636	Hall Bros, New Westminster.	5 lbs..	15	Calgary Milling Co., Calgary	Bran	10·89	1·93	13·38	10 02	5·24	55·54	37636
" 29	" ..	37637	McQuarrie & Co., New Westminster.	5 " ..	15	Unknown.	"	9·80	3·45	12·81	11 70	1·74	57·50	37637
May 3	" ..	37638	Allen's Feed Store, Vancouver.	5 " ..	15	Vancouver Milling Co., Vancouver.	"	10·20	3·50	14 19	5 70	4 72	61 69	37638

"	3	"	....	37639	Brown & Howey, Vancouver	5 lbs.	15	Saskatoon Flour Mills.....	"	.....	10·51	3·70	15·56	9·17	6·10	54 63	37639
"	3	"	....	37610	Vancouver Milling Co., Vancouver.	5 "	15	Vendors.....	"	.....	10 65	4 58	13·38	9·56	1·90	56·93	37640
"	3	"	....	37641	Henry Holtz, Vancouver...	5 "	15	Vendor.....	"	.....	11·47	3·12	14·88	9·22	4·66	56·65	37641
"	4	"	....	37642	Calgary Milling Co., Vancouver.	5 "	15	Vendors.....	"	.....	9·85	4·15	13·81	7·60	5·48	59·11	37642
"	4	"	....	37643	J. Mitchell, Vancouver.....	5 "	15	Calgary Milling Co., Vancouver.	"	.....	10·50	5·10	14 37	9·48	5·10	55·45	37643
"	4	"	....	37644	S. W. Keith, Vancouver ...	5 "	15	Vancouver Milling Co., Vancouver.	"	.....	10·55	4·25	13·38	9 93	5·40	56 49	37644
"	7	"	....	37645	Fox Bros., Vancouver.....	5 "	15	Western Milling Co., Calgary.	"	.....	9·80	4·00	16·19	6·55	4·90	58·56	37645
April	29	"	....	37646	Hall Bros., New Westminster.	5 "	15	Calgary Milling Co., Vancouver.	Shorts	.....	10·86	5·21	16·25	5·09	3·80	58·79	37646
"	29	"	....	37647	McQuarrie & Co., New Westminster.	5 "	15	Unknown	"	.....	10·21	6·53	16·81	8·75	3·76	53·91	37647
May	3	"	....	37648	Allen's Feed Store, Vancouver.	5 "	15	Esterbrooke Milling Co., Eburne.	"	.....	9 35	3·65	13·94	6·20	3·74	63·12	37648
"	3	"	....	37649	Brown & Howey, Vancouver	5 "	15	Ellison Milling Co., Alberta	"	.....	10·00	2·35	14·69	5·00	3·18	64·78	37649
"	3	"	....	37650	Vancouver Milling Co., Vancouver.	5 "	15	Vendors.....	"	.....	11·01	3·49	15·06	6·15	3 60	60·69	37650
"	3	"	....	37651	Henry Holtz, Vancouver...	5 "	15	Vendor.....	"	.....	10·81	3·65	14·69	5·26	3·60	61·99	37651
"	4	"	....	37652	Calgary Milling Co., Vancouver.	5 "	15	Vendors.....	"	.....	10·30	1·60	15·31	4·60	3·42	64 77	37652
"	4	"	....	37653	J. Mitchell, Vancouver.....	5 "	15	Calgary Milling Co., Vancouver.	"	.....	11·00	5·14	14·50	4·78	2·80	61·78	37653
"	4	"	....	37654	S. W. Keith, Vancouver ...	5 "	15	Ogilvie Milling Co.	"	.....	10·36	4·35	16·18	7·66	4·70	56·75	37654
"	7	"	....	37655	Fox Bros., Vancouver.....	5 "	15	Western Milling Co.....	"	.....	10·40	3·85	14 25	10·75	2 70	58·05	37655
April	29	"	....	37656	McQuarrie & Co., New Westminster.	5 "	15	Esterbrooke Milling Co., Eburne.	Middlings*	.....	.....	.....	.....	....	....	.....	37656
May	3	"	....	37657	Vancouver Milling Co., Vancouver.	5 "	15	Vendors.....	"	.....	9·90	1·80	13·06	4·30	2·10	68·84	37657
"	4	"	....	37658	Calgary Milling Co,. Vancouver.	5 "	15	"	"	.....	10·29	6·88	14·28	2·76	1·84	63·95	37658
"	4	"	....	37659	Brown & Howey, Vancouver	5 "	15	City Flour Mills, Edmonton	"	.....	11·65	2·45	12·00	6·55	0·88	66·47	37659
"	7	"	....	37660	Brackman Ker M. Co., Vancouver.	5 "	15	Campbell Ottiwell Co., Edmonton.	"	.....	10·58	3 36	13 50	1·59	2 10	68·87	37660
"	12	"	....	37661	W. H. Walsh, Vancouver..	5 "	15	Vancouver Milling Co., Vancouver.	"	.....	11·60	2 35	11·19	2·40	1·20	71 26	37661
"	14	"	..	37662	Brown & Howey, Vancouver	5 "	15	City Flour Mills, Edmonton	"	.....	10·35	1·60	11·56	4 85	1·78	69·86	37662
"	14	"	..	37663	W. H. Walsh, Vancouver..	5 "	15	Unknown..	"	.....	10·20	2 15	13 50	7·20	2·10	61·85	37663

*Sample lost.

TABLE I—STOCK FEEDS.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report, (Is not an expression of Opinion.)	Results of Analysis. Moisture.	Fat, (Indirect	Proteids.	Crude Fibre.	Ash.	Difference	Number of Sample.
DISTRICT OF VANCOUVER—*Concluded.*														
1909.								p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.
7	Stock feeds..	37666	Fox Bros., Vancouver.....	5 lbs..	15	Pacific Grain Co., Vancouver	Chop feed. Oats.	9·65	3·50	10·69	9·85	3·20	63·11	37666
" 7	" ..	37667	Brown & Howey, Vancouver	5 " ..	15	Vendors..	Chop feed. Common.	10·82	3·08	10·13	8·26	2·74	64·97	37667
" 11	" ..	37668	J. Mitchell, Vancouver.....	5 " ..	15	Unknown.	Chicken chop. ..	11·49	3·37	13·31	5·39	2·80	63·64	37668
" 11	" ..	37669	S. W. Keith, Vancouver....	5 " ..	15	Vendor.....	" ...	9·65	2·65	12·69	7·50	2·10	65·41	37669
" 11	" ..	37670	Brackman-Ker, North Vancouver.	5 " ..	15	Vendors.....	Common chop..	9·60	2·00	9·19	10·25	3·80	65·16	37670
" 12	" ..	37671	W. H. Walsh, Vancouver..	5 " ..	15	Brackman-Ker, Vancouver..	Oat chop.	9·00	2·15	10·56	8·25	3·00	67·04	37671
" 12	" ..	37672	Webster Bros., Vancouver..	5 " ..	15	Brown & Howey, Vancouver	Excelsior chop..	10·59	3·10	10·88	7·88	2·90	64·65	37672
" 13	" ..	37673	Calgary Milling Co., Vancouver.	5 " ..	15	Vendors....	Barley chop.....	11·36	2·03	11·12	5·87	2·80	66·82	37673
" 13	" .	37674	S. T. Wallace, Vancouver..	5 " ..	15	Brackman Ker, Vancouver..	Wheat chop	9·60	2·10	12·19	2·60	1·48	72·03	37674
" 13	" ..	37675	Vancouver Milling Co., Vancouver.	5 " ..	15	Vendors,...	No. 1 chop.....	10·85	2·20	11·19	8·00	2·90	64·86	37675
DISTRICT OF VICTORIA—D. O'SULLIVAN, INSPECTOR.														
June 4	Stock feeds..	39366	Brackman-Ker Milling Co., Vancouver.	5 lbs .	10	Calgary Milling Co., Calgary	Shorts.....	11·49	2·32	13·88	4·11	2·62	66·08	39366
" 4	" ..	39367	" " ..	5 " ..	10	Med. Hat Milling Co., Med. Hat.	"	11·00	4·10	18·18	4·70	3·50	58·52	39367
" 4	" ..	39368	" " ..	5 " ..	10	Columbia Flouring Mills, Enderby.	"	11·16	3·18	17·50	6·34	4·50	57·32	39368

"	4	"	39369	"	"	5	"	10	The Vancouver Milling & Grain Co., Vancouver.	"	11·57	4·76	15·31	5·48	3·68	59·20	39369
"	4	"	39370	"	"	5	"	10	Ogilvie Milling Co., Winnipeg.	Bran	11·49	4·41	14·44	10·03	6·60	53·03	39370
"	4	"	39371	"	"	5	"	10	Western Canada Flour Mills Co. Ltd., Winnipeg.	"	9·05	4·00	14·50	9·70	6·00	56·75	39371
"	4	"	39372	"	"	5	"	10	Lake of the Woods Milling Co., Lake of the Woods.	"	11·06	3·86	14·50	9·46	5·50	55·62	39372
"	4	"	39373	"	"	5	"	10	Calgary Milling Co., Calgary	"	11·29	3·57	13·94	8·85	4·68	57·67	39373
"	4	"	39374	"	"	5	"	15	Columbia Flouring Mills, Enderby.	Middlings	9·85	5·13	15·06	4·02	2·90	63·04	39374
"	4	"	39375	"	"	5	"	15	Calgary Milling Co., Calgary	"	10·54	2·79	13·31	6·42	2·00	64·94	39375
"	4	"	39376	"	"	5	"	10	Brackman-Ker Milling Co., Victoria, B.C.	Chop feed	8·19	4·02	8·81	19·39	4·88	56·71	39376
"	4	"	39377	Brackman Ker Milling Co., Victoria, B.C.		5	"	5	Vendors	Chop feed	10·54	3·50	8·75	12·55	3·80	60·86	39377
"	7	"	39378	Sylvester Feed Co., Victoria, B.C.		5	"	10	Moosejaw Milling Co., Moose Jaw.	Bran	11·10	4·55	15·94	8·00	5·90	54·51	39378
"	7	"	39379	"	"	5	"	10	" "	Shorts	11·08	4·24	14·00	4·46	4·74	61·48	39379
"	7	"	39380	"	"	5	"	5	Vendors	Chop feed	10·84	2·26	10·94	7·67	5·80	62·49	39380
"	7	"	39381	Geo. N. Gowen, Victoria,		5	"	10	Ogilvie Flour Mills, Winnipeg.	Bran	11·49	5·15	13·75	10·26	6·20	53·15	39381
"	7	"	39382	"	"	5	"	10	" "	Shorts	10·07	4·63	16·13	7·35	4·14	57·68	39382
"	7	"	39383	"	"	5	"	10	Columbia Flour Mills, Enderby.	"	10·25	4·29	15·31	6·03	4·24	59·88	39383
"	7	"	39384	"	"	5	"	10	Brackman-Ker Milling Co., Victoria.	Corn chop feed	9·60	2·10	9·25	11·60	3·60	63·85	39384
"	8	"	39385	Scott & Peden, Victoria		5	"	5	Raymond Milling & Elevator Co., Ltd., Raymond, Alta	Bran	8·20	3·90	14·63	7·10	4·60	61·57	39385
"	8	"	39386	"	"	5	"	10	" "	Shorts	8·05	3·75	15·75	5·15	3·40	63·90	39386
"	8	"	39387	"	"	5	"	10	" "	Middlings	9·00	3·95	14·69	7·95	2·40	62·01	39387
"	8	"	39388	"	"	5	"	10	Ogilvie Milling Co., Winnipeg.	Oat meal chop feed.	8·60	2·95	6·63	18·85	6·70	56·27	39388
"	9	"	39389	Bannerman & Horne, Victoria.		5	"	10	Saskatchewan Flour Mills Co., Moosejaw, Sask.	Bran	8·10	4·35	15·94	8·35	6·00	57·26	39389
"	9	"	39390	"	"	5	"	10	" "	Shorts	11·32	4·64	17·13	4·75	3·80	58·36	39390
"	9	"	39391	"	"	5	"	10	Columbia Flouring Mills, Enderby.	Middlings	10·02	4·20	14·14	4·35	3·00	63·99	39391
	9	"	39392	"	"	5	"	10	Vendors	Chop feed	11·17	3·32	12·00	7·14	3·06	63·71	39392
"	9	"	39393	John's Bros., Victoria		5	"	10	Bannerman & Horne, Victoria.	Bran	11·50	4·00	16·56	8·15	5·70	54·09	39393

TABLE I—STOCK FEEDS.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (If not an expression of Opinion.)	Results of Analysis. Moisture.	Fat, (Indirect.)	Proteids.	Crude Fibre.	Ash.	Difference	Number of Sample.
			DISTRICT OF VICTORIA—*Concluded.*											
1909.								p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
June 9	Stock feeds..	39394	John's Bros., Victoria.....	5 lbs.	10	Ellison Milling & Elevator Co. Ltd., Raymond, Leth.	Shorts.....	10·54	3·76	14·50	4·55	2·70	63·95	39394
" 9	" ..	39395	" "	5 " .	5	Brackman-Ker Milling Co., Victoria, B.C.	Chop feed.....	9·35	2·15	19·56	9·70	3·76	61·48	39395
" 10	" ..	39396	T. Redding, Victoria.....	5 " .	15	Columbia Flouring Mills, Enderby.	Middlings	10·91	3·56	12·50	1·57	1·60	69·86	39396
" 10	" ..	39397	Popham Bros.....	5 " .	10	T. Redding, Victoria, B. C.	"	11·36	2·15	11·25	1·84	1·60	68·50	39397
" 10	" ..	39398	R. P. Rithet & Co., Victoria	5 " .	10	Columbia Flouring Mills, Enderby.	Bran.....	11·03	9·52	11·25	9·74	5·40	50·06	39398
" 10	" ..	39399	" "	5 " .	5	" "	Chop feed...	11·25	3·31	13·12	6·76	3·34	62·22	39399
" 10	" ..	39400	" "	5 " .	10	" "	Middlings	11·00	3·06	13·63	2·52	2·14	67·65	39400

TABLE II—BRAN.

Serial Number.	Number of Sample.	Remarks.	Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference.	—
			p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
1	33841		10·59	4·53	14·41	9 08	5·86	55·50	Nova Scotia.
2	33843		10·93	3·12	14·25	11·05	3·92	56·73	
3	33844		10 78	3·55	16·25	9·86	5·76	53·80	
4	33845		9·40	3·90	15·69	10 00	5·46	55·55	
5	33846		10·90	3·60	14·19	9·38	5·60	56·33	
6	33847		9·60	4·25	14·88	11·25	5·16	54·86	
7	33848		11·61	2·75	15·50	8·49	5·34	56·31	
8	33849		10·80	2·36	13·81	10·84	5·28	56·91	
9	33850		11·06	4·80	14·88	9·38	5·64	54·24	
10	33860		11 01	3·71	14·69	9 72	5·90	57·97	
11	38521		10·39	3·84	14·06	9·64	6·00	56·07	P. E. Islan
12	38522		10·74	3·80	15·12	9·74	5·84	54·76	
13	38523		11·59	1·86	14·00	8·17	5·16	59·22	
14	38524		10·61	3·24	13·56	8·76	6·24	57·65	
15	38525		10·60	3·80	14·28	10·06	6·20	55·06	
16	38526		10·86	4·33	15·56	8·29	5·36	55·60	
17	38527		11·30	3·25	12 69	11·35	5·84	55·57	
18	38528		11·58	1 42	13·56	9·46	5·94	58·04	
19	38529		12·59	3·69	14·25	6·77	5·00	57·70	
20	38530		12·91	4·18	14·50	5·88	5·10	57·43	
21	29954		10·30	3·55	14·50	8·17	5·34	58·14	New Brunswick
22	29955		7·90	4·40	13·87	12·15	5·30	56·38	
23	29956		11·15	5·30	13·31	8·79	5·80	55·65	
24	29957		10·61	4·52	15·31	10·55	5·68	53·33	
25	29958		12·29	4·03	14·50	9·80	5·20	54·18	
26	29959		11·79	3·08	13·75	8·68	5·60	57·10	
27	29960		13·37	3·90	13·81	9·08	5·70	54·14	
28	29961		12·89	2·90	12 31	9 90	5·90	56·10	
29	29962		11·80	3·03	13·87	10·43	6·10	54·77	
30	29963		12·16	3 85	14 87	8·47	5 64	55 01	
31	36732		10 94	3·78	15·94	7·47	4·68	57·19	Quebec.
32	36733		10·57	4·96	15·13	8·65	5·64	55 05	
33	36734		10 89	6·06	15·25	7·97	5·74	54 09	
34	36735		10 81	7·05	14·81	8 96	5·60	55·75	
35	36736		10·20	4·00	14·63	7·70	5·88	57·59	
36	36737		9·25	3·90	14·88	8·45	6·00	57·52	
37	36738		10·81	2·96	14·62	8·96	6·16	56·49	
38	36739		10·91	4·42	15·25	8·56	5·80	55·06	
39	36740		10 74	4 37	14·81	9·42	5·54	55 12	
40	36741		10·61	4·15	15·75	6·23	4·24	59·02	
41	38801		10·33	3·92	14·81	9·88	5·88	55·18	St. Hyacinthe.
42	38802		9·66	3·46	14·81	8·73	5·44	57·90	
43	38803		10·94	5·54	15·56	9·40	5·84	52·72	
44	38804		10·40	3·70	14·37	11·90	4·60	55·03	
45	38805		12·32	4·10	15·75	7·93	5·28	54·62	
46	38806		12·23	3·68	15 81	8·82	7·16	52·30	
47	38807		10·24	6·93	15·31	9·19	5·40	52 93	
48	38808		10·20	5·51	15·56	8·47	5·44	54·82	
49	38809		11·09	3·75	12 69	12·67	5·10	54·70	
50	38810		13·09	3 06	14 62	8·75	5·18	55·30	
51	40202		11·72	4·00	14·06	9·01	4·74	56·47	Montreal.
52	40203		11·61	4·25	14 62	8·80	5·48	55·24	
53	40204		12·67	4 27	16·19	8·05	5·14	53·68	
54	40205		10·58	3·93	15·56	7·73	5·38	56·82	
55	40206		11·44	4·07	15·12	9 26	5·60	54·51	
56	40207		12·31	4 73	14 81	9·78	5·50	52·87	
57	40208		11·76	5·33	15·25	8·90	5·40	58·36	
58	40209		10·25	4·33	13 62	10·21	6·40	55·19	
59	40210		12·30	3·65	14·50	9 87	5·90	53·78	
60	40211		11·74	3·39	15 06	8·63	5·46	55·72	
61	41201		10·53	3·05	15·13	7 88	5·44	57·97	Ottawa.
62	41202		10·49	5·46	14·88	8 34	5·24	55·59	
63	41203		11·49	3·29	15·56	8 94	5·40	55·32	

TABLE II—BRAN.

Serial Number.	Number of Sample.	Remarks.	Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference.	—
			p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
64	41204		9·85	2·30	15·38	12·30	5·90	54·27	Ottawa.
65	41205		10·36	2 22	14·25	11·17	5·64	56·36	
66	41206		10 87	3·64	14·19	9·04	5·74	56·52	
67	41207		9·50	4·70	14·94	11·65	5·84	53·37	
68	41208		10 04	3·41	14 44	8·89	5·34	57·88	
69	41209		10·98	3·09	14·38	9·78	5·04	56·73	
70	41210		9·40	4·30	14 50	10·90	6·00	54·90	
71	41101		10·68	5·55	14·38	9·42	5·50	54·47	Kingston.
72	41102		10·57	4·83	15·31	8·55	5·41	55·30	
73	41103		10·71	4·47	13·06	10 22	5·50	56·04	
74	41104		10 82	4·91	14·00	10·08	6·26	53·93	
75	41105		11·22	4·33	15·25	7·92	5·48	55·80	
76	41106		8 60	4·45	15·31	10·55	5·40	55·69	
77	41107		10·93	3·06	15·25	8·72	5·24	56·80	
78	41108		10 64	3·74	15·06	8·96	5 96	55·64	
79	41109		11·14	4·39	13·06	10·04	6·88	54·49	
80	41110		9·75	3·75	12·69	11·55	6 50	55·76	
81	36264		11·10	3·08	13·75	9·13	6·30	56 64	Toronto.
82	36265		10 05	4·37	13·87	12·21	6·20	53·30	
83	36266		12·45	3·90	14·37	9·60	4·50	55·18	
84	36267		11·20	3·85	14·00	10·95	4·60	55·40	
85	36268		11·51	3·47	13·50	8·73	5·54	64·25	
86	36269		11·12	3·16	14·69	10·38	6·10	54·55	
87	36270		11·39	3·95	16·00	8·48	5·10	55·08	
88	36271		9 80	4·40	14·94	8·00	4·90	57 96	
89	36272		12 72	2·11	13·56	9 92	5 84	55·85	
90	36273		12 47	1·93	13·43	10·84	5 64	55·69	
91	30651		10·58	2 89	15 06	10 02	5·60	55·85	London.
92	30656		10·16	3 59	14·81	9 18	5·40	56·86	
93	30659		10·49	4·01	14·62	9·36	5·72	55·80	
94	30662		10 10	3·96	14·69	3 96	3·16	64·13	
95	30663		10 82	2·83	14·06	8·75	5 60	57·94	
96	30666		10·86	3·01	11·81	13·20	5·80	55·32	
97	30667		9·69	4·25	14·63	8·55	5 80	57·17	
98	30671		11 49	5·10	13·94	9·43	6·74	53·30	
99	30674		9·25	3·00	14·19	8·15	6·10	59·31	
100	35921		9·88	4·71	15·12	10·33	6·20	53·76	Windsor.
101	35924		10·22	4·86	15·75	8·91	5·80	54·46	
102	25926		10·11	4·16	14·94	9·38	5·24	56·17	
103	35931		10·91	4 83	13·63	10 02	6·50	54·11	
104	35938		10·89	3·41	14·62	9·87	6·20	55·01	
105	35952		11 94	3·42	13·75	9·35	5·86	55·68	
106	35956		...	...	...	...	...	...	
107	35958		11·77	1·72	13 75	9·43	5·60	57·73	
108	35959		11·07	3 61	14 44	9·87	5 64	55·37	
109	39701		10·00	4·05	14·88	7·80	5·38	57·89	Manitoba.
110	39702		9·95	3·60	15·00	13·00	4·24	51·21	
111	39703		10.50	4·46	14·00	9·80	5·70	55·54	
112	39704		10·92	3 67	14·81	9·99	5 74	51·87	
113	39705		11·00	4·33	14·94	9·16	5·64	51 93	
114	39706		10 84	3·06	13·50	10·39	6·06	56·15	
115	39707		10·65	3·80	14·25	10 23	5·90	55·17	
116	39708		11·46	2·46	15·68	10 22	5·90	54·28	
117	39709		11 72	5·34	15·06	9·37	4·88	53 63	
118	39710		10·56	3·16	14·81	11·53	5·98	53 96	
119	35533		10·17	2·30	16·63	9·16	4 10	57·31	Calgary.
120	35534		8·70	4·40	17·56	7·30	5 24	56·80	
121	35535		10·65	2·54	14·69	10·02	5·94	56·16	
122	35536		9·30	3·55	13·50	10·40	5·84	57 41	
123	35537		9·85	2·50	13·75	10·00	5·00	58·90	
124	35538		9·45	4 00	15·50	10·15	5·70	55·20	
125	35539		10·82	3·01	14·88	8·46	5·10	57·70	
126	35540		10·20	3·58	14·63	8·48	4·50	58 61	
127	35541		8 05	3·70	13·19	7 15	5·44	62·47	
128	35542		9·15	3·60	14 00	8·40	5·00	60·45	

TABLE II—BRAN.

Serial Number.	Number of Sample.	Remarks.	Moisture.	Fat (Indirect.)	Proteids.	Crude Fibre.	Ash.	Difference.	—
			p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
129	37636		10·89	4·93	13·38	10·02	5·24	55·54	Vancouver.
130	37637		9·80	3·45	12·81	11·70	4·74	57·50	
131	37638		10·20	3·50	14·19	5·70	4·72	61·69	
132	37639		10·54	3·70	15·56	9·47	6·10	54·63	
133	37640		10·65	4·58	13·38	9·56	4·90	56·93	
134	37641		11·47	3·12	14·88	9·22	4·66	56·65	
135	37642		9·85	4·15	13·81	7·60	5·48	59·11	
136	37643		10·50	5·10	14·37	9·48	5·10	55·45	
137	37644		10·55	4·25	13·38	9·93	5·40	56·49	
138	37645		9·80	4·00	16·19	6·55	4·90	58·56	
139	39370		11·49	4·41	14·44	10·03	6·60	53·03	Victoria.
140	39371		9·05	4·00	14·50	9·70	6·00	56·75	
141	39372		11·06	3·86	14·50	9·46	5·50	55·62	
142	39373		11·29	3·57	13·94	8·85	4·68	57·57	
143	39378		11·10	4·55	15·94	8·00	5·90	54·51	
144	39381		11·49	5·15	13·75	10·26	6·20	53·15	
145	39385		8·20	3·90	14·63	7·10	4·60	61·57	
146	39389		8·10	4·35	15·94	8·35	6·00	57·26	
147	39393		11·50	4.00	16·56	8·15	5·70	54·09	
148	39398		11·03	9·52	14·25	9·74	5·40	50·06	
148	Samples.	Means	10·69	3·92	14·67	9·26	5·53	56·01	
		Maximums	13·37	9·52	17·56	13·20	7 16	64·25	
		Minimums	7·90	1·42	11·81	3·96	3·16	50 06	

TABLE III.—MIDDLINGS OR SHORTS.

Serial Number.	Number of Sample.	Remarks.	Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference.	—	
			p.c.	p.c.	p.c.	p.c.	p.c.	p.c.		
1	33842		9·05	3·50	16·19	10·55	4·16	56·55	Nova Scotia	Middlings.
2	33851		10·35	3 98	14·94	5·87	4·40	60·46		"
3	33852		11·00	3·39	16·00	7·20	3·90	58·51		"
4	33853		11·15	3 09	14·19	6·43	4·40	60·74		"
5	33854		10·47	4·03	15·06	6·37	4·36	59·71		"
6	33855		11·17	4 46	14·38	5·47	4·00	60·52		"
7	33856		10·78	4·40	15·12	6 04	4·74	58·92		"
8	33857		11·02	4·31	15·56	5·36	4·20	59 55		"
9	33858		10·56	3 58	13·38	4·38	3·50	64·60		"
10	33859		10·40	3·66	15·31	7·04	4·28	59·31		"
11	33861		10·80	4·75	16·31	7·19	4·86	56·09		Shorts.
12	33862		10·73	4·39	14·88	5·47	4·10	60·43		"
13	33863		11·25	4 67	14·94	6 35	3·92	58·87		"
14	33864		10·98	5·10	15·81	7·37	4·10	56·64		"
15	33865		11·37	4 82	11·88	5·80	3·98	59·15		"
16	33866		11·15	4·82	14·06	7·45	4·88	57·64		"
17	33867		10·02	5·16	16·25	6·11	5·50	56·96		"
18	33868		10·36	3·84	14 88	5·95	4·48	60·49		"
19	33869		10·37	2·96	14·41	7·92	4·80	59·51		"
20	33870		9·85	4·35	16·88	11·90	4·74	52·28		"
21	38531		11·26	4·88	15·12	5·26	4·30	59·18	P. E. Island.	"
22	38532		12·01	4·52	15·12	4·85	3·90	59·60		"
23	38533		10·86	4·13	14·50	4·85	4 10	51·56		"
24	38534		10·62	4·41	15·68	5·05	4·00	61·24		"
25	38535		10·50	3·00	11·63	4·35	1·04	69·48		"
26	38536		10·68	5·81	16·06	5·13	4·64	57·68		"
27	38537		10·42	4·41	16·44	4·88	3·92	59 93		"
28	38538		11·55	3·40	14·06	1·06	1·90	68·03		"
29	38539		13·09	1·80	11·63	0·30	0·96	72·22		"
30	38540		13·27	1·33	10·00	1·37	1·70	72·33		"
31	29964		9 50	2 90	16·63	5·50	3·41	61 93	New Brunswick.	"
32	29965		6·45	3·75	16·38	7·95	3·94	61·53		"
33	29966		9·00	5·25	15·31	8 40	4·04	58 00		"
34	29967		11·19	4·41	15·68	8·55	3·00	57·17		"
35	29968		10·13	5·73	15·06	8·66	4·44	55·98		"
36	29969		10·75	4·96	15·31	8·12	5·08	55·78		"
37	29970		11·45	4·39	14·94	4·56	3·62	51·04		"
38	29971		11·80	3·79	15·81	8·75	4·50	55·35		"
39	29972		11·02	5·55	15·93	8·02	4·80	54·68		"
40	29973		11·15	3·87	16·00	7·81	4·80	56·37		"
41	29974		11·08	3·55	14·62	4·64	4·26	61·85		Middlings.
42	29975		10·10	4·35	16·69	3·55	3·26	62·05		"
43	29976		11·45	4·38	15·93	6·63	4·54	57·07		"
44	29977		11·17	4·70	14·62	5·51	3·74	60·26		"
45	29978		12·14	3·10	13·81	3·03	2·54	65·38		"
46	29979		10·69	5·14	16·81	6·43	3·80	57·13		"
47	29980		10·67	4·93	16 87	5·36	4·04	58·13	New Brunswick,	Middlings.
48	29981		11·55	4·68	14·37	5·63	4·04	59·73		"
49	29982		13·50	4·11	14·81	5·83	4·08	57·67		"
50	29983		12·00	5·75	17·00	5·13	3 90	56·22		"
51	36742		10·00	2·30	15·06	5·80	3·00	63·84	Quebec,	Shorts.
52	36743		9·91	3 74	14·94	9·24	4·84	57·33		"
53	36744		10·45	4·10	14 94	9·85	2·70	57·96		"
54	36745		11·07	2·12	14·38	2·48	2·20	67·45		"
55	36746		10·82	2·77	14·38	3·63	2·94	65·46		"
56	36747		10·93	4·37	15·69	9·62	3·26	56·03		"
57	36748		10 50	2·15	15·06	5·50	2·50	64·29		"
58	36749		11·02	4·00	17·06	5 52	4·14	58·26		"
59	36750		9·95	2 85	14·50	6·35	4·24	62·11		"
60	36751		10·86	3·61	15·25	5·19	3·22	61·87		"
61	36752		10·50	2·00	13·56	5·10	3·30	65·54		Middlings.
62	36753		10·40	3·65	13·09	10·32	3 94	58·60		"
63	36754		10·36	4·59	15 68	4·14	3·58	61·75		"

TABLE III—MIDDLINGS OR SHORTS.

Serial Number.	Number of Sample.	Remarks.	Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference.	—	
			p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
64	36755		11·84	4·21	16·62	5·67	3 80	57·86	Quebec	Middlings.
65	36756		10·00	2·25	15·31	4·95	2·20	65·29	"	"
66	36757		10·84	3·33	15·31	5·32	4·68	60·52	"	"
67	36758		11·08	3·49	16·44	6·02	3·80	59·17	"	"
68	36759		10·64	3·62	14·44	1·44	2·10	67·76	"	"
69	36760		10 10	4·35	16·18	12 15	3·94	53·28	"	"
70	36761		10·55	5·18	16·56	5·63	4·08	58·00	"	"
71	38812		9·90	2 70	15·38	5·90	4·60	61·52	St. Hyacinthe	Shorts.
72	38813		10·88	4·16	15·75	6·81	4 36	58·04	"	"
73	38814		10·17	3·66	15·50	7·75	4·26	58·66	"	"
74	38815		9·10	4·30	15·75	6·30	4·28	60·27	"	"
75	38816		11·04	3·31	15·69	2·70	2·80	64 43	"	"
76	38817		9·82	4·75	16·56	7 65	4·30	56·92	"	"
77	38818		11·24	4·20	15 68	6·50	4·40	57·98	"	"
78	38819		10·76	4·98	16·06	5·20	3 52	59 48	"	"
79	38820		11·60	5·27	16·56	5·44	4·04	57·09	"	"
80	38821		10·49	5·22	15·93	6·02	3·90	58·44	"	"
81	38823		10·09	4·21	16·18	8·33	4·08	57·20	"	Middings.
82	38824		9·50	3·00	13·13	3·85	3·48	67·04	"	"
83	38825		8·35	3·25	14·81	5·75	4·40	53·44	"	"
84	38826		10·40	3·10	16·13	8·25	3 46	58·66	"	"
85	38827		10·61	3·66	16·25	5 70	3·60	60·18	"	"
86	38828		9·99	3·43	15·31	4·70	3·74	62·83	"	"
87	38829		11·86	3·80	15·06	6·10	3·70	59·48	"	"
88	38830		11·94	3·75	15·56	6·15	3·90	58·70	"	"
89	38831		11·52	3·16	15·75	2·74	3·40	63·43	"	"
90	38832		11·54	3·32	13·50	6·42	4·34	60·88	"	"
91	40212		11·37	5·69	15·94	7·35	4·54	55·11	Montreal	Shorts.
92	40213		11·62	5 66	14·19	5·00	3·90	59·63	"	"
93	40214		9·55	4 50	16·19	6·15	5·14	58·47	"	"
94	40215		11·17	3·49	14·44	4·62	3·94	62·34	"	"
95	40216		10·37	3 83	14·44	4·87	3·48	63·01	"	"
96	40217		10·75	5·40	15·12	6·87	4·78	57·08	"	"
97	40218		11 86	3·91	16·18	4·65	3·74	59 66	"	"
98	40219		10·81	5 32	16·25	6·66	4·00	56·96	"	"
99	40220		10·49	4·32	13·00	9·92	3·64	58·63	"	"
100	40221		11·46	5·68	16·56	5·77	3 90	56·63	"	"
101	40222		10·86	1·28	13·63	1·82	1·80	70·61	"	Middlings.
102	40223		9·95	3·50	18·00	3·45	3·40	61·70	"	"
103	40224		12·08	0 97	13·56	0·69	1·30	71·40	"	"
104	40225		11·80	3 02	15·81	6·76	4·60	58·01	"	"
105	40226		10·24	2·41	13·87	1·12	1·90	70·46	"	"
106	40227		10·99	3·65	16·19	6·60	3·80	58 77	"	"
107	40228		9 73	5·41	16·00	7·46	4·18	57·22	"	"
108	40229		11·53	4 01	15·69	6·67	3·94	58·16	"	"
109	41211		9·83	4·26	16·38	4·78	4·74	60·01	Ottawa	Shorts.
110	41212		9·87	5·11	17·00	6·30	4·20	57·52	"	"
111	41213		10·35	3·63	15·13	4 45	3·24	63·20	"	"
112	41214		10·51	4·61	16·25	5·64	3·60	59·39	"	"
113	41215		10·90	4·15	16·25	3·47	3·60	61·63	"	"
114	41216		9·63	4·20	16·88	6·50	4·16	58·63	"	"
115	41217		9·55	4·25	16·88	6·15	4·44	58·73	"	"
116	41218		9·40	3·75	17·00	5·25	4·14	60·46	"	"
117	41219		9·00	3·60	15·94	5·00	3·50	62·96	"	"
118	41220		11·59	4 65	15·94	7·51	3·90	56 41	"	"
119	41221		10·10	2·50	14·94	2·25	3·10	67·11	"	Middlings.
120	41222		11·19	4·09	16·13	4·39	3·34	60·86	"	"
121	41223		10·61	4 92	17·31	1·11	4·00	62 05	"	"
122	41224		10·56	2·70	15·75	5·13	3·26	62·60	"	"
123	41225		10·86	2·42	15·56	2·27	2·10	66·79	"	"
124	41226		9·40	3·00	14·44	2·30	1·70	63·16	"	"
125	41227		9·35	3·50	15·06	4·80	4·00	63·29	"	"
126	41228	Feed Flour, formerly sold as Middlings.	10·60	3·24	14·81	0·70	1·54	69·11	"	"

TABLE III—MIDDLINGS OR SHORTS.

Serial Number.	Number of Sample.	Remarks.	Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference.		
			p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
127	41229	Feed flour, formerly sold as middlings.	10·72	0·95	12·88	0·22	3·40	71·83	Ottawa	Middlings.
128	41230		11·67	1·15	13·13	0·95	0·78	72·32		"
129	41111		10·52	5·23	16·81	6·20	4·24	57·00	Kingston	Shorts.
130	41112		10·14	4·60	16·80	5·35	3·80	59·93		"
131	41113		9·97	3·95	16·38	5·26	3·70	60·74		"
132	41114		11·00	4·59	14·50	6·08	4·40	59·43		"
133	41115		11·21	4·52	16·19	5·25	3·90	58·93		"
134	41116		10·51	4·26	14·50	9·48	4·28	56·97		"
135	41117		10·08	4·81	16·06	5·75	3·90	59·40		"
136	41118		10·83	3·93	14·81	6·01	4·36	60·06		"
137	41119		10·99	3·36	14·25	4·98	3·66	62·76		"
138	41120		9·89	4·70	16·44	4·88	3·80	60·29		"
139	41121		11·48	1·75	14·69	1·04	1·40	69·64		Middlings.
140	41122		10·25	4·40	15·56	5·96	3·62	60·27		"
141	41123	'Nest' Brand	10·35	3·63	16·25	4·45	3·90	61·42		"
142	41124		10·14	4·99	17·50	4·59	3·64	59·14		"
143	41125		10·32	5·22	16·44	5·18	3·74	59·10		"
144	41126		10·13	4·87	16·44	5·35	4·10	59·11		"
145	41127		10·16	5·16	16·44	7·40	3·80	57·04		"
146	41128		11·02	4·17	14·81	5·75	4·20	60·05		"
147	41129		9·65	4·55	14·25	8·60	3·68	59·27		"
148	41130		9·70	4·30	15·50	9·10	4·04	57·36		"
149	36274		10·75	3·73	15·38	7·01	4·56	58·57	Toronto	"
150	36275		8·95	2·35	15·81	5·85	4·40	62·64		"
151	36276		10·89	4·43	15·56	4·87	4·94	59·31		"
152	36277		10·26	5·02	15·75	5·96	3·90	59·11		"
153	36278		11·30	4·87	16·19	4·82	3·68	59·14		"
154	36279		10·78	4·29	16·38	5·55	4·00	59·00		"
155	36280		11·45	4·85	15·68	6·07	3·88	58·07		"
156	36281		11·16	4·71	14·28	5·72	4·00	60·13		"
157	36282		11·56	3·22	13·13	1·42	2·36	68·31		"
158	36283		10·92	6·83	15·25	5·75	4·34	56·91		"
159	36284		10·34	3·30	14·50	5·18	4·38	62·30		Shorts.
160	36285		10·38	4·97	15·38	4·80	4·04	60·43		"
161	36286		8·70	4·15	11·94	8·55	4·50	59·16		"
162	36287		10·18	4·74	16·81	5·10	3·90	59·27		"
163	36288		10·85	4·72	15·75	5·89	3·88	58·90		"
164	36289		10·86	3·20	15·06	4·29	3·64	62·96		"
165	36290		11·70	4·89	15·81	5·30	3·96	58·34		"
166	36291		10·34	6·12	17·12	5·34	4·06	57·02		"
167	36292		11·22	5·68	15·81	7·51	4·08	55·70		"
168	36293		11·72	5·24	15·81	6·13	3·86	57·24		"
169	30650		9·55	5·00	16·69	4·55	4·10	60·11	London	"
170	30652		10·66	3·65	11·44	4·40	3·88	62·97		"
171	30655		9·61	5·20	15·69	5·17	4·04	60·29		"
172	3·658		10·11	4·95	15·94	5·67	4·20	59·13		"
173	30660		9·59	5·24	16·63	7·79	4·84	55·91		"
174	30661		11·39	2·49	14·19	7·94	5·14	58·85		"
175	30664		11·36	5·76	14·68	6·62	4·68	56·90		"
176	30665		11·09	4·27	14·06	5·11	3·96	61·51		"
177	30669		10·36	4·63	18·93	5·19	5·74	55·15		"
178	30672		11·50	4·98	16·18	5·71	3·90	57·73		"
179	30675		10·38	4·95	17·00	5·12	3·90	58·65		"
180	35922		9·80	5·25	15·25	5·18	3·96	60·56	Windsor	"
181	35923		10·27	4·61	15·31	4·37	3·76	61·68		"
182	35925		10·24	5·41	16·68	5·18	3·76	58·73		"
183	35927		9·55	4·15	16·88	8·25	4·00	57·17		"
184	35928		10·03	5·16	16·05	5·00	3·80	59·96		"
185	35929		10·32	3·92	11·41	5·93	4·14	51·25		Middlings.
186	35933		10·60	2·92	13·50	0·67	1·31	61·97		"
187	35934		10·78	2·78	12·06	1·00	1·00	72·38		"
188	35936		11·20	1·22	13·13	0·54	1·10	72·81		"

TABLE III—MIDDLINGS OR SHORTS.

Serial Number.	Number of Sample.	Remarks.	Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference.	—
			p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
189	35937		10·60	3·00	14·50	6·90	2·80	62·20	Windsor. Shorts.
190	35943		9·99	4·70	15·31	5·84	2·24	62·12	Middlings.
191	35944		9·20	4·90	13·56	6 60	3·90	61·84	"
192	35945		10·55	4·29	14·68	5·42	4·24	60·82	"
193	35948		9 35	4 70	15·56	9·75	4·30	56·34	Shorts.
194	35949		10·29	5·43	16·44	5·92	3·80	58·12	Middlings.
195	35951		10·75	5·63	17·00	5·20	4·00	57·42	Shorts.
196	35953		10·80	3·47	15·31	5·00	4·40	61·02	Middlings.
197	35954		13·56	3·42	15·12	4·73	3·34	59·83	Shorts.
198	35955		10·90	5·47	17·31	4·75	4·00	57·57	"
199	35957		10·25	3·80	12 62	1·00	1·30	71·03	Middlings.
200	39711		10·55	5·32	14·87	7·45	3·50	58·31	Manitoba. Shorts.
201	39712		10·07	4·41	16·00	6·80	4·40	58·32	"
202	39713		10·24	5·35	16·44	6·46	4·20	57·31	"
203	39714		10·21	5·72	16·87	6·72	4·30	56·18	"
204	39715		10·38	4·12	14·50	8·06	3·74	59·20	"
205	39716		9·83	4·42	16·25	6·38	4·18	58·94	"
206	39717		10·37	5 01	14·85	7·55	4·14	58 08	"
207	39718		11·09	3·40	15·75	5·02	3·88	60·86	"
208	39719		11·62	3·08	16·81	5·67	4·08	56·74	"
209	39720		10·87	3·81	15·75	5·16	3·54	60·87	"
210	39721		10·15	2·80	12 88	11·95	2·28	59·94	Middlings.
211	39722		10·75	0·95	11·25	1·25	0·90	74·10	"
212	39723		10·44	5·93	16·69	5·61	4·14	57·19	"
213	39724		8·35	3·50	16·38	7·35	3·90	60·52	"
214	35543		9·90	4·20	16·38	6·10	3·44	59·98	Calgary. Shorts.
215	35544		9·60	3·70	16·44	6·45	3·38	60·43	"
216	35545		8·40	4·85	17 31	5·25	4·04	60·15	"
217	35546		10·76	2 75	14·88	4·28	3·36	63·97	"
218	35547		10 78	3·53	15·50	3·90	3·38	62·91	"
219	35548								"
220	35549		10·15	3·87	15·56	4·21	3·34	62·87	"
221	35550		10·88	3·45	15·13	3·89	2 94	63·71	"
222	35551		10·64	3·94	15·38	5·60	4·26	60·18	"
223	35552		9·40	4·25	14·81	5·65	3·14	62·75	"
224	37646		10·86	5·21	16·25	5·09	3·80	58·79	Vancouver "
225	37647		10·24	6·53	16·81	8·75	3·76	53·91	"
226	37648		9·35	3·65	13 94	6·20	3·74	63·12	"
227	37649		10·00	2·35	14·69	5·00	3·18	64·78	"
228	37650		11·01	3·49	15·06	6·15	3·60	60·69	"
229	37651		10·81	3·65	14·69	5·26	3 60	61·99	"
230	37652		10·30	1·60	15·31	4·60	3 42	64·77	"
231	37653		11·00	5·14	14·50	4·78	2·80	61·78	"
232	37654		10·36	4·35	16·18	7·66	4·70	56·75	"
233	37655		10·40	3·85	14·25	10·75	2·70	58·05	"
234	37656								Middlings.
235	37657		9·90	1·80	13 06	4·30	2·10	68·84	"
236	37658		10 29	6·88	14·28	2 76	1·84	63·95	"
237	37659		11 65	2·45	12·00	6·55	0·88	66·47	"
238	37660		10·58	3·36	13·50	1·59	2·10	68·87	"
239	37661		11·60	2·35	11·19	2·40	1·20	71·26	"
240	37662		10·35	1·60	11·56	4·85	1·78	69·86	"
241	37663		10·20	2·15	13·50	7·20	2·10	64 85	"
242	39366		11·49	2·32	13·38	4·11	2·62	66·08	Victoria. Shorts.
243	39367		11·00	4·10	18·18	4·70	3·50	58·52	"
244	39368		11·16	3·18	17·50	6·34	4·50	57·32	"
245	39369		11·57	4·76	15·31	5·48	3·68	59·20	"
246	39374		9·85	5·13	15·06	4·02	2·90	63·04	Middlings.
247	39375		10 54	2·79	13·31	6·42	2·00	64·94	"
248	39379		11·08	4·24	14 00	4·46	4·74	61·48	Shorts.
249	39382		10·07	4 63	16·13	7·35	4·14	57·68	"
250	39383		10 25	4·29	15·31	6 03	4·24	59 88	"
251	39386		8·05	3·75	15·75	5·15	3 40	63 90	"

TABLE III—MIDDLINGS OR SHORTS.

Serial Number.	Number of Sample.	Remarks.	Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference.	—
			p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
252	39387		9·00	3·95	14·69	7·95	2·40	62·01	Victoria. Middlings.
253	39390		11·32	4·64	17·13	4·75	3·80	58·36	Shorts.
254	39391		10·02	4·20	14·44	4·35	3·00	63·99	Middlings.
255	39394		10·54	3·76	14·50	4·55	2·10	63·95	Shorts.
256	39396		10·91	3·56	12·50	1·57	1·60	69·86	Middlings.
257	39397		11·36	2·45	14·25	1·84	1·60	68·50	"
258	39400		11·00	3·06	13·63	2·52	2·14	67·65	"
258	Samples.	Means	10·54	4·04	15·25	5·63	3·63	60·55	
		Maximums	13·56	6·88	18·93	12·15	5·74	74·18	
		Minimums	6·45	0·95	10·00	0·22	0·88	51·04	

TABLE IV—CHOP FEED *(MOULÉE)*.

Serial Number.	Number of Sample.	Remarks.	Moisture.	Fat (Indirect)	Proteids.	Crude Fibre.	Ash.	Difference.	—	
			p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
1	33871	Victor	10·04	2·15	8·06	13·00	3·60	63·15	N. S.	Chop feed (Moulée)
2	33872	Standard	10·34	3·61	10·00	13·03	3·22	59·80		"
3	33873	O & B	10·57	2·93	10·12	6·55	2·74	67·09		"
4	33874	Corn, oats and barley	10·85	3·17	10·88	10·76	2·70	61·64		"
5	33875	Banner	10·00	2·40	8·69	10·15	2·28	66·48		"
6	33876	Durham	8·50	2·65	8·56	12·90	3·74	63·65		"
7	33877	Victoria	9·35	3·45	9·38	8·60	2·40	66·82		"
8	33878	"Gem" oats, barley and corn.	10·02	4·08	10·75	7·49	3·62	64·04		"
9	33879	L. K	10·35	2·90	14·81	11·45	3·94	56·55		"
10	33880		10·41	2·70	15·38	7·22	4·34	59·95		"
11	29984		9·00	1·80	8·68	7·85	3·60	69·07	N. B.	"
12	29985		10·00	3·05	10·00	7·90	3·24	65·81		"
13	29986		9·00	4·22	12·62	4·60	1·94	67·62		"
14	22987		10·75	3·45	8·25	6·35	2·44	68·76		"
15	29988		10·04	0·90	11·37	25·80	4·00	47·89		"
16	29989		11·26	4·56	11·31	3·87	4·08	64·92		"
17	29990		9·75	3·10	8·25	10·65	4·08	64·17		"
18	29991		11·97	4·10	12·25	6·98	3·64	61·06		"
19	29992		12·21	3·10	9·69	13·80	4·50	56·70		"
20	29993		12·05	1·72	10·68	8·15	4·46	62·94		"
21	36762		8·00	3·05	9·44	13·05	3·44	63·12	Quebec	"
22	36763		11·07	3·22	11·69	12·85	4·40	56·77		"
23	36764		10·38	2·79	10·06	10·56	3·14	63·07		"
24	36765		11·85	1·53	7·19	17·06	3·92	58·45		"
25	36766		10·05	3·55	10·75	12·40	3·00	60·25		"
26	36767		10·50	1·60	12·31	8·06	3·60	63·99		"
27	36768		10·68	4·11	11·19	9·47	3·50	61·05		"
28	36769		9·55	2·00	12·19	9·00	3·50	63·76		"
29	36770		10·96	3·12	13·19	7·64	4·50	60·59		"
30	36771		10·87	4·33	10·06	12·75	4·20	57·79		"
31	38834	Barley	9·80	2·25	10·50	6·15	2·60	68·70	St. Hyacinthe	"
32	38835	Oat	8·60	2·65	9·25	6·70	4·18	68·62		"
33	38836	Barley	9·00	2·10	13·06	3·90	2·80	68·84		"
34	38837	Barley meal	11·55	0·87	10·00	6·36	2·56	68·66		"
35	38839		11·35	3·44	11·38	4·42	2·24	67·17		"
36	38840	Victor	10·49	3·40	8·06	11·23	3·34	63·48		"
37	38841	Oats and barley	11·26	1·09	11·81	7·50	2·68	65·66		"
38	38842	Flaxseed and barley	9·93	11·75	11·81	4·87	7·64	54·00		"
39	38843	Wheat	11·96	2·30	14·87	4·29	3·50	63·08		"
40	38814	Mixed	11·76	1·81	9·87	13·85	3·64	59·07		"
41	38845	Corn	10·60	2·85	8·81	1·85	1·30	74·59		"
42	40232		10·00	4·29	10·00	10·62	3·40	61·69	Montreal	"
43	40233		9·85	2·15	16·19	7·05	3·40	61·36		"
44	40234		10·87	2·05	12·63	9·43	3·44	61·58		"
45	40235		10·08	4·22	9·63	8·81	3·34	63·92		"
46	40236		9·92	2·73	10·94	9·89	3·32	63·20		"
47	40237		10·84	3·43	10·31	11·87	3·54	60·01		"
48	40238		9·78	3·11	10·75	10·06	2·90	63·40		"
49	40239		10·16	3·96	11·00	12·25	4·10	58·53		"
50	40240		11·85	3·02	13·62	6·68	2·26	63·17		"
51	40241		10·01	7·36	12·31	4·64	2·24	63·44		"
52	41231	Wheat	11·60	3·10	15·31	4·58	4·80	60·61	Ottawa	"
53	41232		11·05	1·28	10·44	9·90	2·64	64·69		"
54	41233		10·61	2·83	11·75	5·89	2·84	66·08		"
55	41234		10·45	3·10	15·31	10·55	3·00	57·59		"
56	41235		9·75	2·15	12·19	9·95	3·30	62·66		"
57	41236	Wheat	9·85	3·80	15·31	5·90	4·50	60·64		"
58	41237		8·70	2·10	6·75	12·80	4·30	65·35		"
59	41238		10·54	3·22	7·50	13·51	4·20	61·63		"
60	41239		9·20	2·10	7·44	13·85	4·24	63·17		"
61	41240		8·75	3·40	11·38	10·15	3·10	63·22		"
62	41131		10·56	3·82	10·44	10·32	3·10	61·76	Kingston	"
63	41132		10·79	2·78	9·00	8·46	2·92	66·05		

TABLE IV—CHOP FEED *(MOULÉE)*.

Serial Number.	Number of Sample.	Remarks.	Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference.	—
			p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
64	41133		10·50	3·33	10·69	11·05	3·64	60·79	Kingston..Chopfeed (Moulée)
65	41134		10·41	3·99	10·75	10·52	3·10	61·23	"
66	41135		10·01	3·09	10·69	10·53	3·54	62·14	"
67	41136		10·51	2·33	10·06	9·33	3·36	64·41	"
68	41137		11·53	3·94	12·06	3·18	1·88	67·41	"
69	41138		10·24	2·94	10·69	10·93	3·30	61·90	"
70	41139		9·80	3·20	10·13	13·55	3·40	59·92	"
71	41140		11·49	5·09	8·81	1·67	1·04	71·90	"
72	36299		12·00	2·75	10·94	6·48	2·70	65·13	Toronto. "
73	36300		10·99	2·12	7·69	11·45	3·34	64·41	"
74	41301		10·05	4·45	10·00	12·50	2·84	60·16	"
75	41302		8·95	2·35	11·63	5·25	2·60	69·22	"
76	41303		10·49	3·64	7·38	9·86	3·48	65·15	"
77	41304		10·35	2·40	10·50	9·00	2·60	65·15	"
78	41305		6·85	3·72	8·68	10·60	3·46	66·69	"
79	41306		9·40	3·00	10·25	10·50	2·82	64·03	"
80	41307		9·15	2·75	10·56	10·25	3·40	63·89	"
81	41308		10·51	4·07	12·06	7·13	3·44	62·79	"
82	30653		10·75	1·80	9·88	5·60	1·96	70·01	London "
83	30657		8·10	2·85	15·31	5·90	6·80	61·04	"
84	30668	Corn	11·02	3·09	10·00	2·85	1·44	71·60	"
85	30670		12·58	2·62	10·56	6·83	2·30	65·11	"
86	30673	Corn	11·84	4·77	9·00	1·44	1·60	71·35	"
87	30676		10·94	2·95	10·25	6·46	2·80	66·60	"
88	30679		10·45	2·70	10·50	9·80	3·14	63·41	"
89	30680		10·90	2·31	9·63	10·17	3·40	63·59	"
90	30682		12·67	2·98	8·81	1·21	1·40	72·93	"
91	35930		10·06	2·86	11·00	13·30	3·40	59·38	Windsor. "
92	35932	Corn	11·67	4·22	10·31	1·47	1·40	70·93	"
93	35935		11·57	3·06	11·25	11·58	3·32	59·22	"
94	35939		12·32	2·35	10·15	5·78	2·70	66·70	"
95	35940	Corn	13·92	1·85	13·87	1·32	1·20	67·84	"
96	35941	"	9·70	6·97	10·44	3·45	4·28	65·15	"
97	35942		11·00	2·40	10·06	9·20	3·20	64·14	"
98	35946		11·97	1·26	9·87	5·48	2·80	68·62	"
99	35947	Oat	10·80	1·95	11·13	11·82	2·70	61·60	"
100	35950	Wheat	11·34	2·73	14·00	2·58	2·94	66·41	Manitoba. "
101	39731		10·50	2·90	10·50	7·90	2·48	65·72	"
102	39732		3·05	4·50	11·75	12·20	2·60	65·90	"
103	39733		10·05	4·12	13·67	12·21	2·34	57·61	"
104	39734		10·32	4·94	11·56	10·06	3·00	60·12	"
105	39735		10·60	2·45	11·31	8·65	2·56	64·43	"
106	39736		10·40	3·83	10·31	12·26	3·34	59·86	"
107	39737		10·25	3·85	10·50	10·10	3·10	62·20	"
108	39738		10·50	2·05	10·75	9·30	2·80	64·60	"
109	39739		10·25	3·97	15·68	5·67	4·58	59·85	"
110	35563	Barley	11·36	0·97	10·00	4·77	2·34	70·56	Calgary. "
111	35564	Oat	10·40	3·75	10·56	12·37	3·14	59·78	"
112	35565	"	9·25	2·85	11·75	11·40	2·84	61·91	"
113	35566	"	10·31	4·39	9·63	11·49	3·34	60·84	"
114	35567	Barley	11·40	1·00	11·81	4·75	2·18	68·86	"
115	35568	Oat	10·48	4·33	11·75	9·00	3·00	61·44	"
116	35569	Barley	11·07	3·67	11·00	5·96	2·56	65·74	"
117	35570	Flaked oats	11·12	3·77	11·13	11·00	3·10	59·88	"
118	35571	Barley	11·20	0·98	10·13	5·22	2·44	70·03	"
119	35572	Oat	9·25	3·35	10·50	8·45	3·20	65·25	"
120	37666	"	9·65	3·50	10·69	9·85	3·20	63·11	Vancouver. "
121	37667	Common chop	10·82	3·08	10·13	8·26	2·74	64·97	"
122	37670	"	9·60	2·00	9·19	10·25	3·80	65·16	"
123	37671	Oat	9·00	2·15	10·56	8·25	3·00	67·04	"
124	37672	Excelsior chop	10·59	3·10	10·88	7·88	2·90	64·65	"
125	37673	Barley	11·36	2·03	11·12	5·87	2·80	66·82	"
126	37674	Wheat	9·60	2·10	12·19	2·60	1·48	72·03	"

TABLE IV—CHOP FEED *(MOULÉE)*.

Serial Number.	Number of Sample.	Remarks.	Moisture.	Fat (Indirect).	Proteids.	Crude Fibre.	Ash.	Difference.	—
			p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
127	37675	No. 1 chop	10·85	2·20	11·19	8·00	2·90	64·86	Vancouver, Chop Feed.
128	39376	B. & K. Dairy	8·19	4·02	8·81	19·39	4·88	56·71	Victoria "
129	39377	B. & K. ground	10·54	3·50	8·75	12·55	3·80	60·86	..... "
130	39380	Creamery	10·84	2·26	10·94	7·67	5·80	62·49	..... "
131	39384	Corn	9·60	2·10	9·25	11·60	3·60	63·85	..... "
132	39388	Oat meal chop	8·60	2·95	6·63	18·85	6·70	56·27	..... "
133	39392	Excelsior	11·17	3·32	12·00	7·14	3·06	63·31	..... "
134	39395	.....	9·35	2·15	10·56	9·70	3·76	64·48	..... "
135	39399	.....	11·25	3·31	13·12	6·76	3·34	62·22	..... "
135 Samples.		Means	10·38	3·09	10·70	8·69	3·24	64·45	
		Maximum	13·92	11·75	16·19	25·80	7·64	74·59	
		Minimum	3·05	0·87	6·63	1·21	1·04	47·89	

APPENDIX M.

BULLETIN No. 192—COPPER IN VEGETABLES.

OTTAWA, November 9, 1909.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I beg to hand you, herewith, a report upon the copper content of 70 samples of tinned vegetables, chiefly peas, and of French origin. One sample (Mushrooms) was purchased through a mistake on the part of the inspector. This contains no copper.

A decision of the United States Department of Agriculture, dated May 1, 1908, is as follows :—

FOOD INSPECTION DECISION 92.

THE USE OF COPPER SALTS IN THE GREENING OF FOODS.

As provided in Food Inspection Decision 76, the Secretary of Agriculture has considered the question of foods greened with copper salts. It has been decided that foods so treated are not entitled to entry into the United States under the provisions of section 11 of the Food and Drugs Act. Inasmuch as contracts have already been made for the present year's pack, until January 1, 1909, all vegetables greened with copper salts, but which do not contain an excessive amount of copper and which are otherwise suitable for food, will be allowed entry into the United States, if the label bears the statement that sulphate of copper or other copper salts have been used to colour the vegetables. On and after January 1, 1909, no foods greened with copper salts will be allowed entry into the United States.

GEO. B. CORTELYOU,
Secretary of the Treasury.

JAMES WILSON,
Secretary of Agriculture.

OSCAR S. STRAUS,
Secretary of Commerce and Labour.

WASHINGTON, D.C., May 1, 1908.

It will be noted that the phrase 'an excessive amount of copper,' occurs in this document, as well as in F.I.D., 76, of June 18th, 1907. It is evidently desirable, to ascertain what constitutes an excessive amount of copper in vegetables. The decision quoted evidently conditions the total absence of copper, after January 1, 1909.

So high an authority as Dr. Tunnicliffe (British Food Commission, 1899) holds that 'in a proportion not exceeding half a grain of metallic copper per pound, the presence of copper is quite harmless.' This corresponds to 71 parts per million, as a maximum. I am not aware of any other recognized authority having definitely stated a permissible limit for copper.

If we accept this limit, for purposes of comparison, it is found that 42 samples of the present collection exceed the amount named: i e., 60 per cent of the collection.

The copper has been determined electrolytically, and is stated as parts by weight per million on the drained, but not dried vegetables.

All of these were found in good condition; and it is interesting to note that decided anti-putrescent effects are claimed for copper by Dr. Springer, (Journal of Industrial and Engineering Chemistry; 1909, p. 676).

The interior of the can was slightly rusted in two cases, but not to such a degree as to affect the colour of the contents. In the case of four samples, viz.: 40347, 40348, 40349 and 40350, the copper was determined separately in the drained vegetables and in the liquid content of the tin. The liquid contained no copper in solution, except in the case of No. 40348 where 30 parts copper per million were obtained.

I am unable, at present, to advise definitely as regards small amounts of copper in vegetables; but would respectfully recommend that medical opinions on the subject be obtained. The present report will serve the purpose of furnishing material for opinion; and I beg to recommend its publication as Bulletin No. 192.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

NOTE.—While this bulletin is in press, a highly important article on the coppering of vegetables appears in the current number of the 'Zeitschrift für Untersuchung der Nahrungs und Genussmittell.' From this article by Dr. G. Stein, the following is abstracted:—

It is particularly important to the keeping of tinned vegetables that they should be thoroughly sterilized. Sterilization under pressure at 120° C. destroys the chlorophyll, and the vegetables become yellow-brown unless previously treated with copper. Copper was formerly introduced by boiling in copper vessels, which yielded copper to solution in the acids naturally present in the vegetables; it is now introduced as salts of copper, mainly as the sulphate. The coppering of vegetables was first practised in France, but popular appreciation of the product has caused the innovation to be adopted by other countries. No other method of giving a desirable green to the preserved vegetable has proved a success; and although it is possible by using selected material and working with special care, to retain much of the natural green of peas in the preserved article, the process would be too costly to be worked profitably on the large scale.

It is recognized that certain copper salts are poisonous; but that copper may be present in harmless combinations would appear from the fact that many vegetables naturally contain copper, Tschirch has shown that in coppered peas the copper exists as *phyllocyanate* (green) or as *leguminate*, which is colourless, and is only formed when the process of coppering is carried too far. Neither of these compounds is soluble in water; and the watery fluid in the tin (Einbettungsflussigkeit) may be quite free from copper.

Well known investigators have shown that most copper compounds are either harmless, or cause vomiting and diarrhœa only, in quantities of 100 to 200 milligrams daily, even when continued for weeks. When excess of copper is employed in greening

peas, the excess appears as leguminate which has been proved to be harmless to rabbits, fed for weeks on peas containing 0.126 per cent of copper. Copper salts of the fatty acids (stearates, oleates, &c.) are however known to be poisonous, and it is not certain that, by the simultaneous use of coppered vegetables and fatty foods, copper salts of the fatty acids may not be formed, and poisoning result.

K. Spiro has shown that it is only in the liquid content of the tin that copper salts, capable of reacting with fatty acids, may be present. The copper of the peas themselves does not so react. The imbedding fluid should contain no dissolved copper; and usually contains none.

In France, the prohibition of copper in colouring vegetables, was rescinded in 1889. In Italy and Switzerland only such are prohibited as contain more than 100 parts of copper per million. Austria forbade both the manufacture and the importation of coppered vegetables until 1899, since which date a maximum of 55 parts copper per million is tolerated. Belgium forbids the use of copper, as 'useless and harmful.' Russia also forbids coppering, while England has no legislation on the subject. Germany, since 1896, permits the presence of 55 parts copper per million.

It becomes a serious question for the manufacturer, in the light of above named legislation, to ascertain whether or not he can satisfactorily green his vegetables with so small an amount of copper as 55 parts per million. The work of Graff and others indicates that it is for the most part impossible to give a uniform and satisfactory greening with so small an amount of copper. The question of exact methods of analysis is also one of importance, where a limit of 55 parts per million is to be worked to. Stein approves of the Electrolytic method, for both accuracy and convenience.

From Dr. Stein's analyses, I quote the following interesting figures:—

COPPER CONTENT (PARTS PER MILLION).

In the Drained Vegetables.	Imbedding fluid.	Total.
84	11	95
78	13	91
86	17	103
48	5	53
46	5	51
75	4	79
76	20	96

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).	Results of Analysis. Condition.	Results of Analysis. Copper Parts per Million.
DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR.									
1909.									
Oct. 5	French Peas	41841	Dillon Bros., Halifax, N.S.	3 tins.	54	C. H. Feyosimeau, Bordeaux, Francee.		Good	80
" 6	"	41842	Bauld Bros., Halifax, N.S.	3 "	45	Alp. Pinard, Bordeaux, Francee.	Imported by Vendors, guaranteed under Food Act, Serial Number 1754.	"	80
" 6	"	41843	John Tobin & Co., Halifax, N.S.	3 "	68	Brun Freres, France	" "	"	100
" 8	"	41844	W. A. Smith, Kentville, N.S.	3 "	51	Morcean & Co., France	" "	"	90
" 12	"	41845	Blaek & Co., Truro, N.S.	3 "	40	Francios Petit & Co., Paris, France.	Imported by Vendors	Can slightly rusted.	90
DISTRICT OF NEW BRUNSWICK—J. C. FERGUSON—INSPECTOR.									
Sept. 9	French Peas (Imported).	39578	H. W. Cole, Ltd., St. John, N.B.	3 tins.	40	Chas. Binks, Montreal		Good	90
" 13	" "	39579	Baird & Peters, St. John, N.B.	3 "	40	Lafurie Freres, Paris and Bordeaux, France.		"	70
" 14	" "	39580	McPherson Bros., St. John, N.B.	3 "	75	F. Delory, Lorient, France		"	60
" 21	" "	39581	Geo. T. Whelpley Estate, Fredericton, N.B.	3 "	75	" "		"	80
Oct. 6	" "	39582	F. P. Reid & Co., Moncton, N.B.	3 "	33	Chas. H. Binks, Montreal	Direct importation through Chas. H. Binks, "Millionaire" Brand.	"	90

DISTRICT OF QUEBEC—E. BELAND, INSPECTOR.

Sept.	9	French Peas	36647	J. S. Hogue, St. Paulin	3 tins.	45	L. Chaput fils & Co., Montreal.		Good		60
"	10	"	36648	J. V. Milot, St. Alexis	2 "	25	" "		"		100
"	13	"	36649	Charle Heaton, Louiseville	3 "	60	Hudon Hebert, Montreal		"		70
"	14	"	36650	L. P. St. Pierre, Trois Riviere	3 "	90	Whitead & Turner, Quebec		"		60
"	14	"	36651	L. P. Peltier, Trois Riviere	3 "	90	Hudon Hebert, Montreal		"		100

DISTRICT OF ST. HYACINTHE—J. C. ROULEAU, INSPECTOR.

Sept.	17	French Peas (Imported)	1245	L. Moreau, St. Jean	3 bxs.	45	L. A. Price, Bordeaux, France		Good		80
"	22	" "	1246	J. O. McDonald, Lac Megantic.	3 "	60	Edgar & Cie		"		80
"	24	" "	1247	V. Archambault, Sherbrooke East.	3 "	60	B. Leforest, Périgumx		"		70
"	27	" "	1248	R. O. Brodeur, St. Hyacinthe	3 "	54	F. Delorey, Lorient		"		80
"	23	" "	1249	C. J. Lane, Lennoxville	3 "	38	Geo. Dalidet & Cie, Bordeaux		"		70

DISTRICT OF MONTREAL—J. J. COSTIGAN, INSPECTOR.

Sept.	8	French Peas (Imported)	40346	J. O. Desrochers, 472 St. Denis St., Montreal.	3 tins.	50	F. Delorey, Lorient, France.		Good		70
"	8	" "	40347	Moquin et frere, 120 St. Denis St., Montreal.	3 "	45		Marque "Soleil." Fabrique de Consomes Aliementaire	"		70
"	8	" "	40348	Currie Bros., 185 Bleury St., Montreal.	3 "	45	Talbot freres, Bordeaux, France.		"		90
"	10	" "	40349	N. Collin & Co., 310 Notre Dame East, Montreal.	3 "	60		"Le Soleil"	"		50
"	17	" "	40350	F. Poirier, 24 St. Catherine West, Montreal.	3 "	54	Marie Thumas Louvains		"		80

BULLETIN No. 192—FRENCH PEAS (IMPORTED).

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).	Results of Analysis. Condition.	Results of Analysis. Copper Parts per Million.
DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR.									
1909.									
Oct. 1	French Peas (Imported)..	42826	J. G. Stewart, Ottawa.....	3 tins.	60	Unknown.....	Labelled Talbot freres.....	Good.....	80
" 1	" " ..	42827	P. D. Herbert, Ottawa.....	3 " .	52	S. J. Major, Ltd., Ottawa...	Le Soleil. Société Anonyme	"	80
" 1	" " .	42828	" "	3 " .	45	Henri Jonas, Montreal.....	F. Delorey, Lorient, France	"	140
" 1	" " ..	42829	C. Moreland, Ottawa.....	3 " .	75	" "	" " ..	"	100
" 1	" " ..	42830	" "	3 " .	1 05	" "	Bayle fils frere, France ...	"	80
DISTRICT OF KINGSTON—JAS. HOGAN, INSPECTOR.									
Sept. 7	French Peas.....	42741	J. Crowford, Kingston.....	3 tins.	60	Beaumarghand.....	....	Good.....	100
" 7	"	42742	J. Redden, Kingston.....	3 " .	75	Delorey, Lorient, France....	... .	"	80
" 8	"	42743	W. T. Patterson, Belleville..	3 " .	45	" "	....	"	70
" 8	"	42744	Wallbridge & Clarke, Belleville.	3 " .	60	" "	....	"	100
" 8	"	42745	Guillet Bros., Cobourg.....	3 " .	45	Le Lielos.....	. ...	"	30

DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.

Sept.	23	French Peas	41387	Peebles Hobson Co., Ltd., Hamilton.	3 tins.	45	R. Monbadon, Paris and Bordeaux, France.		Good		60
"	22	"	41388	A. R. McLachlin, Hamilton.	3 "	40	Geo. Dalidet & Co., Bordeaux, France.		"		40
"	25	"	41389	W. J. Nichol, Toronto	3 "	30	Unknown		"		60
"	25	"	41390	A. White, Toronto	3 "	45	R. S. McIndoe, Toronto		"		110
"	27	"	41391	R. Barron, Ltd., Toronto	3 "	45	R. Monbadon, Paris and Bordeaux, France.		"		70

DISTRICT OF LONDON—T. KIDD, INSPECTOR.

Sept.	14	French Peas	30820	A. Beattie & Co., St. Mary's	3 tins.	35	Unknown		Good		70
"	14	"	30823	Beattie & Co., Stratford	3 "	50	"		"		60
"	20	"	30842	Jackson & Sons, Guelph	3 "	38	Henri Jonas, Montreal		"		80
"	21	"	30847	Chas. Eweng, Goderich	3 "	45	W. G. Patrick, Toronto		"		50
"	27	"	30862	A. J. Groom, Guelph	3 "	45	Balfour Smye, Hamilton		"		110

DISTRICT OF WINDSOR—JNO. TALBOT, INSPECTOR.

Oct.	4	French Peas	42606	Burmise & Co., Chatham	3 tins.	38	F. Delorey, Lorient, France.		Good		110
"	7	"	42631	T. J. Salmoni, Kingsville	3 "	75	Beaumarchand, Paris	Moyens	Can slightly rusted.		80
"	8	"	42644	Birchell & Vansickle, St. Thomas.	3 "	45	Dandicolle & Ganden, Bordeaux.	Dandicolle & Genden, Petit Pois. Moyens.	Good		120
"	8	"	42645	Butler Bros., St. Thomas	3 "	45	Beaumarchand, France	Packed in Italy. Coloured with sulphate of copper.	"		100
"	8	"	42646	T. A. Rowat, London	3 "	60	G. Dalidet & Co., Bordeaux	Labelled Ste. Bordelais	"		90

BULLETIN No. 192—FRENCH PEAS (IMPORTED).

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).	Results of Analysis. Condition.	Results of Analysis. Copper Parts per Million.
DISTRICT OF MANITOBA—A. C. LARIVIERE, INSPECTOR.									
1909.									
Sept. 13	French Peas	39816	A. Macdonald & Co., Winnipeg.	3 tins.	40	Ch. Teysonneau, jue, Bordeaux, France.	Peit Pois. Moynes a la anglaise.	Good	70
" 13	"	39817	E. B. Nixen, Winnipeg	3 "	60	" "	" "	"	60
" 13	"	39818	The T. Eaton Co., Winnipeg.	3 "	55	" "	Pet Pois. Extra fine	"	50
" 13	"	39819	The Hudson Bay Co., Winnipeg.	3 "	90	R. Monbadon, Paris and Bordeaux, France.	Packed for the Hudson Bay Co.	"	40
" 13	"	39820	" "	3 "	45	F. Delorey, Lorient, France.	Pois Demi Fine	"	100
DISTRICT OF CALGARY—R. W. FLETCHER, INSPECTOR.									
Sept. 10	French Peas (Imported)	35627	Hudson Bay Co., Lethbridge	3 tins.	75	F. Delorey, Lorient, France.		Good	80
" 10	" "	35628	Bentley Co., Lethbridge	3 "	75	Grosut Beand, Lorient, France.		"	30
" 11	" "	35629	Spencer & Todd, Medicine Hat.	3 "	75	J. R. Teyssoneau, Lorient, France.		"	80
" 11	" "	35630	H. W. Ireland & Co., Medicine Hat.	3 "	75	A. Roger & Co., Bordeaux, France.		French mushrooms, not peas	
" 14	" "	35631	Hudson Bay Co., Calgary	3 "	75	R. Monbadon, Paris		Good	100

DISTRICT OF VANCOUVER—J. F. POWER, INSPECTOR.

Sept	17	French Peas (Imported)..	37753	W. T. Walker, Steveston...	3 tins.	75	V. V. E. Savarin, Bordeaux.	.....	Good.....	90
"	18	" " ..	37754	H. W. Chapman, Vancouver	3 "	60	Lafaurie freres, Bordeaux...	.....	"	90
"	20	" " ..	37755	Hudson Bay Co., Vancouver	3 "	75	R. Monbadon, Bordeaux ..	.....	"	70
"	20	" " .	37756	H. A. Edgett & Co., Vancouver.	3 "	75	Geo. Dalidet & Co., Bordeaux	.....	"	90
"	21	" " ..	37757	London Grocery. Vancouver	3 "	1 05	" " ..	.....	"	80

DISTRICT OF VICTORIA—D. O'SULLIVAN, INSPECTOR.

Oct.	14	French Peas (Imported)..	41574	Windsor Grocery Co., Victoria, B.C.	3 tins.	75	R. Monbadon, France. ..	Extra fine	Good.....	80
"	15	" " ..	41575	The West End Grocery Co., Ltd., Victoria, B.C.	3 "	60	George Dalidet & Co., Bordeaux, France.	Moyens	"	80
"	15	" " ..	41576	Copas & Young, Victoria, B.C.	3 "	1 05	The Hudson Bay Co., Victoria, B.C.	Extra fine	"	60
"	15	" " ..	41577	Saunders Grocery Co., Ltd., Victoria, B.C.	3 "	75	George Dalidet & Co., Bordeaux, France.	"	"	80
"	18	" " ..	41578	Erskine & Co., Victoria, B.C.	3 "	75	J. H. Todd & Son, Victoria, B.C.	.....	"	50

APPENDIX N.

BULLETIN No. 193—LARD.

OTTAWA, December 3, 1909.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I beg to hand you a report covering the results of examination of 70 samples purchased as *Lard*, throughout Canada, in September and October last.

Lard has on two former occasions been made the subject of inspection by this department, viz.: in August and September of 1888 (See Bull. 7) and in December of 1907 and January of 1908 (See Bull. 147).

Referring to Bulletin 7, I find that the inspection of 1888 was consequent upon 'numerous prosecutions for selling adulterated lard which have, within the last twelve months, taken place in England.' The report in question deals with 109 samples, and 66 per cent of these are found to be adulterated under the Act, by admixture with, and substitution of an inferior article. This inferior article is *Water* in 12 samples, and cotton seed oil, or stearin in 61 samples. Of this collection 38 samples were Canadian made, 60 samples were American made, and 11 samples were of unknown origin. All but one of the American lards contained cotton seed products, while only three Canadian lards were found to contain cotton seed oil. The late Chief Analyst remarks: 'There are to be found a few cases, from which it would seem that our manufacturers are beginning to imitate American practices.'

At the date of this report (1888) the use of cotton seed oil in lard manufacture was comparatively a new thing. The importance of inspectoral work under the Adulteration Act is well illustrated by the fact that, while 66 per cent of the samples examined in 1888 contained cotton seed oil without acknowledgment, subsequent inspections show that the sale of a cotton seed oil containing article, as lard, is now quite an exceptional occurrence. The intermixture of cotton seed oil continues, but the product is sold as a compound, and conforms to Section 24 (d) of the Act. The inspection of 140 samples in February, 1908, showed only two (2) to contain cotton seed oil, without acknowledgment of the fact.

The present report dealing with 70 samples, shows five (5) samples, sold as genuine, to contain cotton seed oil.

No objection on the ground of wholesomeness, can be taken to the admixture of cotton seed oil in factitious lards, or lard substitutes; but the sale of an article containing cotton seed oil, as a genuine lard, constitutes adulteration under section 3 (a) (b) of the Act. Among samples now reported, eighteen give more or less distinct indications of cotton seed oil (Halphen test); but these are not sufficiently definite to justify the conclusion that there has been purposeful addition of the article. It is known that hogs which have been fed on cotton seed meal may yield a fat capable of

reacting to the Halphen test; and imperfect cleaning of machinery which had been used in manufacturing a compound lard, might easily result in such slight admixture with cotton seed oil as is indicated by the reactions found.

Adulteration by the addition of water to lard, seems to be a thing of the past. In 1888, 11 per cent of the samples examined contained water in excess, the amount varying from 5·55 per cent to 24·47 per cent. One per cent of water in lard is a reasonable maximum allowance, so that the incorporation into lard of the large amounts found in 1888, was a palpable fraud, and required considerable skill in its execution. In 1908 we found one market sample (out of 140 examined) to contain 1·36 per cent of water, evidently by accident since other samples made by the same firm, gave only traces of water. The inspection of 70 samples now reported, shows only one sample to contain as much as 1·18 per cent water, which is barely above the limit quoted and recommended to be made legal.

The use of tallow in the manufacture of compound lards is believed to be not uncommon. The chemical and physical constants for beef and mutton tallow so closely approximate those for ordinary hog fat as to make it difficult for the analyst to assure himself of the presence of tallow. Among many methods of examination, that have been published during recent years, all of which methods have been studied in this laboratory, the most promising seems to be that described by Dr. J. A. Emery, of the U. S. Bureau of Animal Industry (Circ. 132). This depends upon the exact determination of the melting point of the stearins, crystallized out from an ether solution of the fats. The melting points referred to have been determined with great care by Mr. C. C. Forward, of this laboratory, and are inserted in the column headed 'Melting points of solid glycerides.' Although very suggestive in many instances, I do not regard the evidence afforded by them as sufficiently conclusive to justify positive deductions. The method is probably capable of greater refinements than it has yet received, and is being studied with a view to giving its results a greater degree of positiveness than is yet possible. A memorandum by Mr. Forward is appended, giving some results of such investigation as he has made. The conditions under which the solid glycerides are obtained in greatest purity, that is, as free as possible from oleins, are not easily secured. It may be that recrystallization of these would yield crystals having better defined melting points. The matter is being further investigated; and I trust that we may yet be able to obtain a working method that shall enable us to detect with certainty the presence of tallows.

I beg to recommend the publication of this report as Bulletin No. 193.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

Note.—Correspondence with vendors and manufacturers of lard, since writing the above, seems to justify the addition of a note calling to the attention of vendors the importance of the sale of an article for just what it is. It is quite clear that several retail dealers in lard, whose names appear in this Bulletin, purchased compound lards, plainly marked as such by the manufacturers, and purchased at about four cents per pound below the price of lard. These dealers surely knew that it was not lard which they bought, but compound lard, a substitute for the real article. Many of them sold the article to our inspectors stating it to be compound lard; but others sold it as *lard*, with no explanation. In this case the vendor is clearly responsible for selling an adulterated article, and is amenable to the penalties imposed by the Act.

The labelling of a factitious article as *Family Lard*, is not a statement of its compound character, and gives no warning of its sophistication to the purchaser.

MEMORANDUM.

The method of Emery (Circ. 132, Bureau Animal Industry, U. S. Department of Agriculture) for detection of tallow in lard consists in crystallizing the solid glycerides from the sample of fat by maintaining at a temperature of about 17·5° for 18 hours, a 20 per cent solution (weight volume) of the fat in ether; and the subsequent determination of the melting point of the crystals obtained after washing with cold ether and drying.

In applying this method to the present collection of market lards a number of difficulties were experienced. It was found in determining the melting point that the error due to variations in manipulation might amount to half a degree (centigrade); and that the error due to variations in the temperature of the crystallizing bath (between 15° and 20° C.) might amount to one degree. As the difference between the melting point of the crystals from pure lard and those from pure tallow is not over three and a half degrees, it is evident that the range of error must be greatly reduced in order to obtain conclusive results.

In further work a slight alteration was made in the melting point apparatus, viz., the substitution of sulphuric acid (1·3) for water in the inner compartment and also heating the bath more slowly. This was found to lessen the range of error to some extent, at the same time giving slightly higher results in all cases.

Sixteen samples of apparently pure lard (*i.e.*, lard having Iodine number 55-60, and Butyro-refractometer reading 50°-51° and containing no cotton seed oil) gave as a maximum melting point of glycerides 64·4°, a minimum of 63·5°, and an average of 64·0°. The following results were obtained with home rendered pure leaf lard and tallow :—

Pure leaf lard	63·9°
" " 4 per cent tallow	63·5°
" " 8 " "	63·0°
" " 10 " "	62·6°
" " 15 " "	62·5°
Pure tallow	60 3°

Investigatory work is still in progress along the following lines. Maintaining the temperature constant to 0. 2° C., during the 18 hours of crystallization at 17° or 18° C. whichever is found most satisfactory. Exact conditioning of the melting point determination with special reference to size of capillary tubes, initial temperature and time of heating and one or two modifications in the thermometer and bath used.

It is hoped that the total range of error on any sample of lard tested may be so reduced as to make it possible to detect with certainty an adulteration of less than 10 per cent tallow.

CHARLES C. FORWARD.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF NOVA SCOTIA—			
1909.						
Oct. 6	Lard.	41836	C. S. Davis, Halifax, N.S.	1½ lb.	26	Langs Packing Co., Montreal
" 6	"	41837	J. H. Emmett, Halifax, N.S.	1½ "	27	Vendor
" 8	"	41838	DeWolfe & Lamont, Kentville, N.S.	1½ "	27	F. W. Fearman, Hamilton
" 8	"	41839	John Riley, Windsor, N.S.	1½ "	30	Swifts, Chicago
" 11	"	41840	The 2 Barkers Ltd., Amherst, N.S.	1½ "	27	Wm. Davies, Toronto
			DISTRICT OF NEW BRUNSWICK—			
Sept. 9	Lard.	39573	Peters & Rice, St. John, N.B.	2 lbs	34	F. W. Fearman, Hamilton
" 13	"	39574	Slipp & Flewelling, St. John, N.B.	1½ lb	27	Vendors
" 22	"	39575	B. H. Smith & Sons, Woodstock, N.B.	1½ "	26	H. F. Randolph & Sons, Fredericton, N.B.
Oct. 5	"	39576	W. H. Culbert, Sussex, N.B.	1½ "	30	John P. Squire & Co., Boston Mass.
" 6	"	39577	The 2 Barkers Ltd., Moncton N.B.	1½ "	26	The Wm. Davies Co. Ltd., Toronto.
			DISTRICT OF QUEBEC—			
Sept. 8	Lard.	36642	Jos. A. Deschene, St. Ursale	1½ lb	23	Chevalier Pouliot, Joliette
" 8	"	36643	A. Plante, St. Léon	1½ "	24	Davis, Montreal
" 9	"	36644	W. Duhaime, St. Paulin	1½ "	23	" "
" 10	"	36645	Dordré Dho, St. Alexis	1½ "	21	L. Chaput fils & Cie, Montreal.
" 10	"	36646	J. V. Milot, St. Alexis	1½ "	26	" "
			DISTRICT OF ST. HYACINTHE—			
Sept. 15	Lard.	1239	J. W. Turcott, Drummondville.	1 lb.	18	The Laing Packing & Prov. Co. Ltd., Montreal.
" 15	"	1240	J. St. Pierre, Actonvale.	1 "	14	Gunns, Ltd., West Toronto
" 16	"	1241	Alph. Bellard, Waterloo	3 lbs.	45	Vendor
" 22	"	1242	D. M. Matheson, Lake Megantic.	3 "	55	The Whyte Packing Co., Stratford.
" 27	"	1243	R. G. Brodeur, St. Hyacinthe.	1 lb.	16	Laings Montreal

LARD.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.					Number of Sample.	Remarks and Opinion of the Chief Analyst.
	Water.	Iodine Number. (Hanus.)	Butyro Refractometer at 40° C.	Melting point of Solid Glycerides.	Halphen Reaction.		
R. J. WAUGH, INSPECTOR.							
	p. c.						
.....	None...	65·9	51·7	.....	None.....	41836	Genuine.
Kettle rendered ...	0·50	56·5	50·0	64·0	"	41837	"
Labelled Pure Lard.....	None...	62·9	51·0	63 7	Light red.	41838	"
'Silver Leaf' Pure Brand.	" ...	66·7	51 5	64·4	None.....	41839	"
Labelled Pure	" ...	60·6	50 4	63·0	" ...	41840	"
J. C. FERGUSON, INSPECTOR.							
Star Brand Pure.....	None...	60·4	50·9	64·0	None.....	39573	Genuine.
.....	" ...	55 4	49·5	63·7	"	39574	"
'Silver Leaf' Guaranteed Pure.	" ...	65·4	51·2	64·2	"	39575	"
Pure	.....	.....	.....	.....		39576	Sample lost in transit. (Railway collision.)
"	None...	61·0	50·5	63·1	None.....	39577	Genuine.
E. BELAND, INSPECTOR.							
.....	None...	65·9	51·4	.....	None.....	36642	Genuine.
.....	" ...	61·3	51·0	63·4	"	36643	"
.....	" ...	61·8	50 6	62·9	"	36644	"
.....	" ...	55·6	49·5	63·8	"	36645	"
.....	" ...	58·8	50·1	64 0	"	36646	"
J. C. ROULEAU, INSPECTOR.							
Extra Pure Lard.....	0·13	62·4	50 9	64 2	Faint red.	1239	Genuine.
Box marked Gunn's Easifirst Shorten'g, Excels all others	None...	83·2	55·0	61·5	Deep red.	1240	Contains Cotton seed oil. Adulterated.
.....	" ...	58·4	50·1	62·2	None.....	1241	Genuine.
Labelled Pure Lard.	" ...	63·0	51·0	63·8	"	1242	"
Compound.....	" ...	93·4	56·7	61·6	Deep red.	1243	Contains Cotton seed oil. Sold as Compound.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF MONTREAL—			
1909.						
Sept. 2	Lard.....	40301	Wilfrid Bleau, 168 Plessis St. Montreal.	1½ lb..	22	Canada Packing Co., Montreal.
" 3	"	40302	T. A. Berube, 338 Colonial Ave., Montreal.	1½ " .	24	" " ..
" 3	"	40303	T. L. Hodgson, 385 Laval Ave., Montreal.	1½ " .	27	Whyte Packing Co.....
" 4	"	40304	P. Brunet, 697 Mount Royal Ave., Montreal.	1½ " .	26	L. Chaput fils & Cie.....
" 4	"	40305	A. Boyer, 230 Dufferin St., Montreal.	1½ " .	26	Unknown..... .....
			DISTRICT OF OTTAWA—			
Sept. 24	Lard..... .	42821	A. Sweet & Co., Winchester.	1½ lb..	27	The Geo. Matthews Co. Ltd Hull.
" 28	"	42822	C. Carmichael, Spencerville..	1½ " .	27	" " ..
Oct. 5	"	42823	Miss Smith, Ottawa....	1 " .	17	Park Blackwell Co. Ltd., Toronto.
" 5	"	42824	Wall & Co., Ottawa.....	1½ " .	27	Wight & Co., Toronto.... ..
" 5	"	42825	The Geo. Matthews Co. Ltd., 96 Queen St., Ottawa.	1½ " .	27	Vendors, Hull, P.Q.....
			DISTRICT OF KINGSTON—			
Sept. 7	Lard.	42736	Anderson Bros., Kingston...	1½ " .	25	Vendors..... .. ..
" 7	"	42737	J. Redden, Kingston.....	1½ " .	25	Wm. Davies, Toronto..... .
" 7	"	42738	Wm. Davies, Kingston.	1½ " .	25	" " .. ..
" 9	"	42739	Mason Co., Peterboro.	1½ " .	25	Fowlers, Hamilton..... ...
" 9	"	42740	Matthews Co., Peterboro...	1½ " .	27	Matthews, Peterboro.....
			DISTRICT OF TORONTO—			
Sept. 13	Lard.....	41382	E. H. Wilson & Co., Markham.	1½ lb.	24	The Wm. Ryan Co., Ltd., Toronto.
" 15	"	41383	J. C. Mossington, Orillia....	1½ " .	25	The Ingersoll Packing Co., Ingersoll.
" 16	"	41384	C. Beck Mfg. Co., Ltd.....	1½ " .	25	The Park Blackwell Co., Ltd., Toronto.
" 24	"	41385	A. S. Cain, Dundas.	1½ " .	25	F. W. Fearman Co., Ltd., Hamilton.
" 27	"	41386	P. D. Dunn, 1646 Queen St. West, Toronto.	1½ " .	27	The Wm. Davies Co., Ltd., Toronto.

SESSIONAL PAPER No. 14

LARD.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.					Number of Sample.	Remarks and Opinion of the Chief Analyst.
	Water.	Iodine Number. (Hanus.)	Butyro Refractometer at 40° C.	Melting point of Solid Glycerides.	Halphen Reaction.		
J. J. COSTIGAN, INSPECTOR.							
	p. c.						
Sold as Pure. Tub labelled Choice Family Lard.	0·52	85·2	55·4	.....	Deep red.	40301	Contains Cotton seed oil. Adulterated.
" " ..	None...	88·1	55·2	.....	" .	40302	" "
Labelled Pure Lard.....	" ...	61·3	51·2	64·4	None.....	40303	Genuine.
.....	" ...	63·3	51·1	.....	"	40304	"
Sold as Pure...	" ...	57·8	50·2	63·9	"	40305	"
J. A. RICKEY, INSPECTOR.							
Sample from Pail marked Pure Lard.	None...	55·3	50·0	62·0	None.....	42821	Genuine.
" " ..	" ...	56·2	50·0	63·2	Faint pink	42822	"
Labelled Choice Family Lard 'Silver Leaf.'	" ...	60·3	51·0	63·7	Pink. ...	42823	"
....	" ...	61·9	51·0	64·4	None.....	42824	"
Sold as Pure Lard.....	" ...	56·9	50·0	61·7	Light pink	42825	"
JAS. HOGAN, INSPECTOR.							
....	0·12	53·5	50·0	63·8	None.....	42736	Genuine.
.. ..	0·26	58·6	50·6	64·1	"	42737	"
.....	None...	58·0	50·2	64·1	"	42738	"
.....	1·18	62·5	50·9	63·5	"	42739	Genuine: Water content rather high.
....	None...	56·1	49·8	63·9	"	42740	Genuine.
H. J. DAGER, INSPECTOR.							
Labelled Pure Lard.	None...	64·5	51·4	63·8	Light red.	41382	Genuine.
'Beaver' Brand Pure Lard.	" ...	55·8	49·8	63·5	None.....	41383	"
Choice Family Lard.....	" ...	61·2	51·7	62·9	Pink.....	41384	"
'Star' Brand Pure Lard .	" ...	59·0	50·8	63·0	"	41385	"
Pure Refined Lard.	" ...	60·4	50·7	64·4	None. ...	41386	"

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF LONDON—			
1909.						
Sept. 20	Lard.....	30845	Mr. McHardy, Guelph.....	1½ lb.	26	J. & A. McHardy, Guelph..
" 22	"	30855	Hodgins & Bedgood, Blythe.	1½ "	26	A. M. Smith, London.....
" 22	"	30860	D. M. Gordon, Wingham...	1½ "	26	Ingersoll Packing Co., Ingersoll.
" 27	"	30865	Benson Bros., Guelph.	3 "	50	Fowlers & Co., Hamilton ...
" 27	"	30866	Jackson & Son, Guelph	1½ "	25	White Packing Co., Stratford
			DISTRICT OF WINDSOR—			
Oct. 11	Lard..... ..	42648	A. J. Clark & Co., London..	1½ "	Nil.	Park Blackwell Co., Toronto
" 11	"	42649	W. E. Humphries, London..	1½ "	27	Davies Co., Toronto.....
" 11	"	42650	Pinney Bros. & McIntosh, London.	1½ "	26	Ingersoll Packing Co., Ingersoll.
" 11	"	42651	J. Straitch, London.....	1½ "	27	Unknown ....
" 11	"	42652	Mrs. Geo. Armstrong, London	1½ "	27	Davies Co., Toronto.....
			DISTRICT OF MANITOBA—			
Sept. 13	Lard	39811	S. Goddard, Winnipeg.....	1½ "	25	J. Y. Griffin & Co., Winnipeg
" 14	"	39812	W. B. Francis, Winnipeg ...	1½ "	30	Gordon & Ironside, Winnipeg
" 14	"	39813	Moffet & Douglas, Winnipeg	1½ "	27	" " ..
" 21	"	39814	J. Bower & Co., Brandon....	1½ "	30	Gallagher, Holman & Lafrance, Winnipeg.
" 24	"	39815	W. A. Bartram Winnipeg..	1½ "	30	Gordon & Ironside, Winnipeg
			DISTRICT OF CALGARY—			
Sept. 14	Lard.	35622	P. Burns & Co., Calgary....	1½ lb.	60	Vendors..... ....
" 14	"	35623	C. Wourull & Co., Calgary .	1½ "	50	J. Y. Griffin & Co., Calgary.
" 14	"	35624	Farmers Meat Market, Calgary.	1½ "	60	" " ..
" 15	"	35625	Dominion Meat Co. Ltd., Calgary.	1½ "	55	Vendors .....
" 15	"	35626	P. Burns & Co. Wholesale, Calgary.	1½ "	30	" ....

LARD.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.					Number of Sample.	Remarks and Opinion of the Chief Analyst.
	Water.	Iodine Number. (Hanus.)	Butyro Refractometer a 40° C.	Melting point of Solid Glycerides.	Halphen Reaction.		
T. KIDD, INSPECTOR.							
	p.c.						
.....	None...	58·7	50·3	62·7	None....	30845	Genuine.
.....	" ...	61·8	51·0	64·6	"	30855	"
.....	" ...	57·8	50·1	64·3	"	30860	"
.....	" ...	61·2	50·7	64·1	"	30865	"
.....	" ...	57·8	50·0	63·7	"	30866	"
JNO. TALBOT, INSPECTOR.							
Family Lard. This Lard withdrawn from sale by Mr. Clark.	0·28	54·4	50·2	63·3	Faint pink	42648	Genuine.
Davies Pure rendered Lard	None...	59·1	50·1	64·4	None.....	42649	"
Labelled Pure Lard with Beef Fat.	" ...	53·6	49·5	62·3	"	42650	"
.....	" ...	56·8	49·9	64·4	"	42651	"
Pure Lard	" ...	59·4	50·4	64·2	"	42652	"
A. C. LARIVIERE, INSPECTOR.							
.....	None...	64·8	51·4	61·7	Light red.	39811	Genuine.
.....	0·16	62·6	50·9	62·0	Pink.....	39812	"
.....	0·12	61·4	50·9	62·5	"	39813	"
.....	None...	61·4	50·9	63·8	"	39814	"
.....	" ...	59·6	50·5	61·6	"	39815	"
R. W. FLETCHER, INSPECTOR.							
.....	0·12	64·2	51·1	64·2	None.....	35622	Genuine.
.....	None...	68·1	52·0	62·1	Deep red..	35623	Contains Cotton seed oil. Adulterated.
.....	" ...	64·8	51·3	64·0	None.....	35624	Genuine.
.....	0·14	63·2	51·0	64·4	"	35625	"
.....	0·14	63·5	51·0	64·6	"	35626	"

Date of Collectio.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF VANCOUVER—			
1909.						
Sept. 22	Lard.	37763	P. Burns & Co., Vancouver.	1½ lb.	30	Frye Bruhn Co., Seattle.
" 22	"	37764	B. C. Market Co., Vancouver	1½ "	30	Vendors
" 22	"	37765	P. Burns & Co., Vancouver.	1½ "	40	P. Burns & Co., Calgary
" 22	"	37766	Avenue Meat Market, Vancouver.	1½ "	30	J. Y. Griffin, Vancouver.
" 23	"	37767	London Meat Market, Vancouver.	1½ "	25	Vendors
			DISTRICT OF VICTORIA—			
Oct. 14	Lard.	41569	Windsor Grocery Co., Victoria, B.C.	1½ lb.	20	J. Y. Griffin & Co., Victoria
" 15	"	41570	Saunders Grocery Co. Ltd., Victoria, B.C.	1½ "	50	J. Y. Griffin & Co., Winnipeg & Edmonton.
" 15	"	41571	Wm. B. Hall, Victoria, B.C.	1½ "	30	The Frye Bruhn Co., Seattle, Wash.
" 15	"	41572	Dixi H. Ross & Co., Victoria, B.C.	1½ "	40	" "
" 18	"	41573	J. Renouf, Victoria, B.C.	1½ "	25	J. Y. Griffin & Co., Victoria.
	Pure Leaf Lard.		Steam rendered from Kidney fat only			

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LARD.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.					Number of Sample.	Remarks and Opinion of the Chief Analyst.
	Water.	Iodine Number. (Hanus.)	Butyro Refractometer at 40° C.	Melting point of Solid Glycerides.	Halphen Reaction.		
	p. c.						
'Wild Rose' Brand Labelled Pure.	None...	65·3	51·2	64·2	Faint pink	37763	Genuine.
Guaranteed Absolutely Pure.	" ...	68·3	51·9	64·4	"	37764	"
'Shamrock Brand.	" ...	66·2	51·2	64·4	None.....	37765	"
....	" . .	79·1	54·1	61·2	Deep red..	37766	Contains Cotton seed oil. Adulterated.
....	" ...	59·8	50·5	61·9	None.....	37767	Genuine.
J. F. POWER, INSPECTOR.							
Labelled Pure Lard.....	None...	65·4	51·4	64·1	None.....	41569	Genuine.
Labelled 'Griffins' Pure Lard.	0·12	65·4	51·2	64·5	"	41570	"
'Wild Rose' Pure Lard.	None...	67·5	51·5	64·5	Light pink	41571	" .
Labelled Pure Lard.. ...	" . .	67·1	51·6	63·6	Light red.	41572	"
" "	" ...	64·7	51·2	62·7	None.....	41573	"
D. O'SULLIVAN, INSPECTOR.							
... ...	None...	52·0	49·0	63·9	None.		

APPENDIX O.

BULLETIN No. 194—FRUIT JAMS.

Ottawa, December 14, 1909.

W. J. Gerald, Esq.,
Deputy Minister of Inland Revenue.

Sir,—In July of this year an order was issued for the collection of ten (10) samples of Fruit Jams, in each of the (15) Inspectoral Districts of Canada. Our Inspectors were instructed to procure strawberry and raspberry jams by preference. The following table shows the character of the collection made :—

District.	Jams.	Compounds.	Canned Fruit.	Total.
Nova Scotia	10	0	0	10
Prince Edward Island	3	7	0	10
New Brunswick	7	3	0	10
Quebec	1	2	7	10
St. Hyacinthe	9	0	1	10
Montreal	7	3	0	10
Ottawa	10	0	0	10
Kingston	8	2	0	10
Toronto	10	0	0	10
London	7	4	0	11
Windsor	10	0	0	10
Manitoba	10	0	0	10
Calgary	10	0	0	10
Vancouver	9	1	0	10
Victoria	5	0	0	5
	116	22	8	146

Thirty samples which do not meet the requirements of this inspection, being labelled and sold as Compounds, or being *Canned Fruit*, and not jam, are excluded from this report. Of the 116 samples sold as jam, the following are the results of analysis :—

	Samples.
Found genuine	108
" doubtful	7
" adulterated	1
Total	116

No. 975 is a very old sample, which has evidently been kept in a hot place; and not being perfectly sealed, has dried so as to be unfit for use.

Nos. 41273, 41277, 35988, 35991, 978, 983.—These samples contain dextrin, and are evidently made with addition of glucose, but in small quantity. It is an open

question whether or not the addition of small amounts of glucose without declaration of the fact is permissible in jams. Some manufacturers consider the use of five to ten per cent of glucose as desirable, to prevent the separation of sugar by crystallization on long keeping. This question should be determined. The fact that many of the best makers of fruit jam do not use glucose seems to point to the needlessness of introducing even small amounts of the article into jam.

No. 36797. This sample contains a considerable amount of glucose. On account of the very variable nature of commercial glucose the actual amount present can only be approximated, and is at least 20 per cent.

It is true that no legal definition of jam, or explicit standard for the article as required by Section 26 of the Adulteration of Food Act, yet exists for Canada Nevertheless the meaning of jam as 'a conserve of fruit, boiled in mass, with sugar and water,' is so well recognized; and the term has legal meaning in so many countries, that I have no hesitation in declaring a product made with more than ten per cent of glucose, as adulterated under the Act.

The following definition for jam is submitted for criticism and comment; and it is hoped that a legal definition and standard for this important article will be established before another collection is made :

Jam, (marmalade) is the sound product made from clean, sound, properly matured and prepared fresh fruit and sugar (sucrose) by boiling to a pulpy or semi-solid consistence, and conforms in name to the fruit used, and in its preparation not less than forty-five (45) pounds of fruit are used to each fifty-five (55) pounds of sugar.

Jam may be made with glucose instead of sugar, in whole or in part ; and with admixture of other fruits than that which gives its name to the article, so long as the fruit so added does not exceed fifty (50) per cent of the total weight of fruit present, and provided that the word *Compound* is printed on the label, as an integral part of the same, and in letters as large as those which name the fruit of which the jam purports to be essentially made.

Section 24 (d) of the Adulteration Act provides that no food shall be deemed to be adulterated when 'Articles of food not injurious to the health are mixed together as a compound, and sold or offered for sale as such, with each package, roll, parcel or vessel containing such articles distinctly labelled as a mixture in conspicuous characters forming an inseparable part of a general label bearing the name and address of the manufacturer. 53 V., c. 26, s. 1 ; 61 V., c. 24, ss. 2 and 3.'

I inclose with this, for your inspection, the labels taken from the following samples of the present collection, viz.:—40262, 30808, 30699, 30690,36799, 36798, 38570, 38564, 39526, 41181, 38561, 39535, 38568, 40264, 38562 and 40265, in all of which I am of opinion that the requirements of the Adulteration Act are not fairly met; either because of the smallness of the type used, or the want of proper background (see 38564 and 39526) which makes the word 'Compound' indistinct. The labels 38565, 37700, 30810, 38567 and 41180 contain the word 'Mixture' or 'Compound' in distinct lettering ; but in the first two cases, it is placed in such a way as to escape ready notice. I would respectfully advise the adoption of a ruling, something like that authorized for Germany, in regard to which I quote from the Second Edition of the 'Deutsches Nahrungsmittelbuch' 1909, page 283 :—

1. Every declaration must be placed on the same side of the package on which the content of the package is printed.

2. The declaration may be printed on the main label, or on a special label ; but in the latter case, this special label must be affixed directly above or below the main label.

3. In the labelling of Compound Jams, no word on the label must be printed in larger characters than the word 'Compound'.

4. In case of the word 'Compound' being printed on the main label, it must be placed directly over or under the name of the jam, and parallel with this.

5. The word 'Compound' must be printed in an easily legible and dark lettering, upon a light background.

6. If the normal contents of a jam are specially emphasized on the label, this must not be done in a larger type than the word 'Compound'.

7. On containers more than 16 cm. ($6\frac{1}{2}$ inch.) high, the small letters must be 3 mm. ($\frac{1}{8}$ inch.), and on larger containers 5 mm. ($\frac{3}{16}$) inch.) in height.

I beg to recommend the publication of this report as Bulletin No. 194.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).
							DISTRICT OF NOVA SCOTIA—
1909.							
Aug. 3	Fruit Jam..	41711	S. M. Lockhart & Co., New Glasgow, N.S.	3 jars.	30	W. P. Hartley, London, Eng.	Strawberry with gooseberry juice added.
" 4	" ..	41712	Ryan Bros., Truro, N.S.	3 " .	75	T. Lipton, London, Eng.	Pure Strawberry.....
" 4	" ..	41713	H. W. Ryan & Co., Truro, N.S.	3 " .	60	Simcoe Canning Co., Simcoe, Ont.	" " .....
" 11	" ..	41714	Wm. Law & Co., Yarmouth, N.S.	3 " .	54	Aylmer Canning Co., Aylmer, Ont.	" Raspberry.....
" 11	" ..	41715	Lovitt & Lovitt, Yarmouth, N.S.	3 " .	60	E. D. Smith, Winona, Ont.	" Strawberry.....
" 13	" ..	41716	Bauld Bros. & Co., Ltd., Halifax, N.S.	3 " .	59	Crosse & Blackwell, London, Eng.	" Raspberry.....
" 13	" ..	41717	John Tobin & Co., Halifax, N.S.	3 " .	85	Heinz & Co., Pittsburgh, Pa.	" Strawberry.....
" 13	" ..	41718	J. Frank Crowe & Co., Halifax, N.S.	3 " .	65	C. & E. Morton, London, Eng.	" " .....
" 13	" ..	41719	Wentzell, Ltd., Halifax, N.S.	3 " .	75	W. P. Hartley, London, Eng.	" Raspberry and gooseberry.
" 13	" ..	41720	J. S. Creed, Halifax, N.S.	3 " .	75	Thos. Lipton, London, Eng.	" Raspberry.....
							DISTRICT OF PRINCE EDWARD ISLAND—
July 19	Fruit Jam..	38561	J. A. Farquharson, Charlottetown.	3 bots.	30	Ozo Manufg. Co., Montreal.	Strawberry Compound
" 19	" ..	38562	John McKenna, Charlottetown.	3 " .	30	J. A. Lytle & Co., Toronto, Ont.	Raspberry " .
" 21	" ..	38563	J. D. Hume, Murray River.	3 " .	42	R. F. Maddigan, Charlottetown.	Pure Raspberry.....
" 21	" ..	38564	A. M. Ross, Murray River.	3 " .	45	J. W. Windsor, Montreal.	Raspberry Compound
" 26	" ..	38565	P. A. Smith, Charlottetown.	3 " .	36	Aylmer Canning Co., Canada.	Strawberry " .
" 27	" ..	38566	P. A. McKenzie, Hunter River.	3 " .	36	Vendor.....	Pure Strawberry.....
" 27	" ..	38567	E. Campbell, North Wiltshire.	3 " .	36	T. Upton & Co., Hamilton.	Raspberry Compound
" 28	" ..	38568	Waugh & Steeves, Summerside.	3 " .	36	The Simcoe Canning Co., Simcoe, Ont.	Strawberry " .
" 28	" ..	38569	R. T. Holman, Ltd., Summerside.	3 " .	60	J. W. Windsor, Montreal.	" "Balmoral Brand."
" 28	" ..	38570	G. W. Warren, Summerside.	3 " .	36	Hudon, Hebert & Co., Montreal.	Strawberry Compound

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FRUIT JAMS.

Solids per Cent.			Results of Analysis.									Number of Sample.	Remarks and Opinion of the Chief Analyst.
Insoluble.	Soluble.	Total.	Water.	Polarization (Normal Solution). Direct.	Invert.	Difference.	Residual Cane Sugar.	Soluble matter other than Cane Sugar.	Preservatives.	Dyes.	Microscopical Examination.		
R. J. WAUGH, INSPECTOR.													
p. c.	p. c.	p. c.	p. c.				p. c.	p. c.					
6·52	66·04	72·56	27·44	+28·7	−20·8	49·5	36·6	29·44	None...	None...	Strawberry tissues	41711	Genuine.
9·44	62·34	71·78	28·22	+18·7	−18·4	37·1	27·4	34·90	" ...	" ...	" ...	41712	"
13·43	53·70	67·13	32·87	+11·0	−17·5	28·5	21·1	32·60	" ...	" ...	" ...	41713	"
7·83	56·18	64·01	35·99	+ 7·5	−20·3	27·8	20·6	35·58	" ...	Present.	Raspberry tissues	41714	" but dyed
4·40	64·14	68·54	31·46	+ 6·1	−19·9	26·0	19·3	44·84	" ...	None...	Strawberry tissues	41715	Genuine.
10·57	56·52	67·09	32·91	+ 8·4	−19·8	28·2	20·8	35·72	" ...	" ...	Raspberry tissues	41716	"
7·83	64·18	72·01	27·99	+16·4	−15·0	31·4	23·3	40·88	" ...	" ...	Strawberry tissues	41717	"
7·48	60·42	67·90	32·10	+10·1	−19 0	29·1	21·7	38·72	" ...	" ...	" ..	41718	"
3·26	65·40	68 66	31·34	+ 6·8	−20·6	27·4	20·3	45·10	" ...	" ..	Raspberry & gooseberry tissues	41719	
4·16	68·60	72·76	27·24	+20·8	−22·6	43 4	32·0	36·60	" ...	" ...	Raspberry tissues	41720	"
THEO. MOORE, INSPECTOR.													
.....	.....	.....	.. ..	.....	...	. ..	.....	.....	.....	.....	. .. ...	38561	Marked 'Compound.'
.....	.....	. ....	....	.....	.....	... .	.....	....	.....	. .....	.....	38562	"
8·85	60·10	68·95	31·05	− 8·8	−17·7	8·9	6·60	53·50	None...	None...	Raspberry tissues	38563	Genuine.
. ...	...	.....	.....	.....	.....	... .	.....	.....	.....	.....	.....	38564	Marked 'Compound.'
.....	.....	.....	....	.....	.....	.....	....	.....	.....	.....	.....	38565	"
4·91	52·60	57 51	42·49	− 9·6	−13·8	4·2	3·1	49·50	None...	None...	Strawberry tissues	38566	Genuine.
... .	.....	.....	.....	.....	....	.....	....	.....	.....	.....	.....	38567	Marked 'Compound.'
3·24	63·46	66·70	33·30	+74 9	+48·1	26·8	19 8	43·66	Salicylic acid.	Present.	Strawberry tissues	38568	"
5·64	67·80	73·44	26·56	+14·3	−20·5	34·8	25 8	42·00	None...	None...	" .	38569	Genuine.
....	.....	.....	.....	.....	.....	... ..	.....	.....	.....	.....	.....	38570	Marked 'Compound

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.
							DISTRICT OF NEW BRUNSWICK—
1909.							
July 26	Fruit Jam..	39526	Baird & Peters, St. John, N.B.	3 jars.	25	J. W. Windsor, Montreal.	Strawberry Compound
Aug. 5	" ..	39527	Inches & Grimmer, St. Stephen, N.B.	3 " .	75	Sugars & Canners Ltd., Montreal.	Raspberry 'Diamond Brand'.
" 5	" ..	39528	P. H. McKenna, St. Stephen, N.B.	3 " .	75	W. P. Hartley, London, Eng.	Strawberry guaranteed absolutely Pure
" 10	" ..	39529	H. G. Nobles, Woodstock, N.B.	3 " .	75	Chivers & Sons, Ltd., Histon, Cambridge	Raspberry with Fruit Jelly.
" 10	" ..	39530	J. Rankin Brown, Woodstock, N.B.	3 " .	75	E. D. Smith, Winona Ont.	Strawberry... .... ..
" 17	" ..	39531	The Sussex Mercantile Co., Ltd., Sussex, N.B.	3 " .	39	Ozo Co., Ltd., Montreal.	Raspberry Compound.
" 18	" ..	39532	The 2 Barkers Ltd., Moncton, N.B.	3 " .	69	The Wm. Davies Co. Ltd., Toronto.	Raspberry. ....
" 18	" ..	39533	H. F. Dobson, Moncton, N.B.	3 " .	60	Aylmer Canning Co. Ltd., Aylmer, Ont.	Strawberry.....
" 19	" ..	39534	A. J. Loggie, Chatham, N.B.	3 " .	60	E. D. Smith, Winona Ont.	Plum.....
" 19	" ..	39535	M. Bannon, Newcastle, N.B.	3 " .	45	Simcoe Canning Co., Simcoe, Ont.	Strawberry Compound
							DISTRICT OF QUEBEC—
July 20	Fruit Jam..	36601	N. B. Laroche, St Croix Lotbinière.	3 bots.	45	Whitead & Turner, Quebec.	Raspberry. .....
" 21	" ..	36602	J. B. Devillers, St. Edouard, Lotbinière	3 " .	66	" " ..	Strawberry.....
" 21	" .	36603	Ma lm. S. Beaudet, St. Edouard Lotbiniere.	3 " .	40	Bedard & freres, Quebec.	" .....
" 21	" ..	36604	A. Paris, Lotbinière.	3 " .	75	Whitead & Turner, Quebec.	" .. ..
" 22	" ..	36605	Jos. Gauvin, St. Jean Deschaillon.	3 " .	60	Unknown...	" .....
" 22	" ..	36606	Alphonse Douville, St. Jean Deschaillon.	3 " .	60	A. B. Dupuis, Quebec.	" .....
" 20	" ..	36797	W. Lafleur, St. Antoine de Tilly.	3 " .	105	L. Letourneau, Quebec.	Raspberry ....
" 20	" ..	36798	P. Normand, St. Antoine de Tilly.	3 "	30	Unknown	Strawberry.....
" 20	" ..	36799	" " ..	3 " .	30	"	Raspberry..... .....
" 20	" ..	36800	N. B. Laroche, St. Croix Lotbiniere.	3 " .	60	Whitead & Turner, Quebec.	Strawberry.....

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FRUIT JAMS.

Solids per Cent.			Results of Analysis.										Number of Sample.	Remarks and Opinion of the Chief Analyst.
				Polarization (Normal Solution).										
Insoluble.	Soluble.	Total.	Water.	Direct.	Invert.	Difference.	Residual Cane Sugar.	Soluble matter other than Cane Sugar.	Preservatives.	Dyes.	Microscopical Examination.			
J. C. FERGUSON, INSPECTOR.														
p. c.	p. c.	p. c.	p. c.				p. c.	p. c.						
.....	...	.....	.....	.....	..	.....	.....	.....	... .	.....	.....		39526	Marked 'Compound.'
4·43	69·04	73·47	26·53	+13·5	−12·2	25·7	19·0	50·04	Salicylic acid.	Present.	Raspberry tissues		39527	Genuine, but contains a preservative and a dye.
3·63	46·44	50·07	49·93	+23·6	−22·6	46·2	34·1	12·34	None...	None...	Strawberry tissues		39528	Genuine, water content is high.
5·29	70·42	75·71	24·29	+18·0	−20·6	38·6	28·6	41·82	" ...	" ...	Raspberry tissues		39529	Genuine.
6·00	67·54	73·54	26·46	− 7·0	−22·2	15·2	11·3	56·24	" ...	" ...	Strawberry tissues		39530	"
.....	....	.....	...	.....	....	.....	.....	.....	....		.. ...		39531	Marked 'Compound.'
8·30	50·86	59·16	40·84	+18·9	−15·0	33·9	25·0	25·86	None...	Present.	Raspberry tissues		39532	Genuine, is dyed.
5·67	59·60	65·27	34·73	0·0	−19·2	19·2	14·2	45·40	" ...	" .	Strawberry tissues		39533	"
10·50	54·26	64·76	35·24	− 6·1	−19·2	13·1	9·6	44·60	" ...	None...	Plum tissues		39534	Genuine.
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		39535	Marked 'Compound.
E. BELAND, INSPECTOR.														
.....	Is not a jam.	.....	....	....	....	.....	. ...	.. ..	.....	.....			36601	
.....	"	.....	.....	.....	... ...	.....	.....	.....	.....	.....	.....		36602	
.....	"	.....	.....	..	....	.....	.....	....	.....	.....	.....		36603	
.....	"	.....	.....	.....	.....	.....	.....	...	.....	.....	.....		36604	
.....	"	.....	.....	....	.....	.. ..	.....	.....	... .	.....	.....		36605	
.....	"	.....	.....	.....	.....	. ...	.....	.. .	.....	.....	... ...		36606	
6·86	64·74	71·60	28·40	+49·5	+29·4	20·1	14·9	49·84	None...	Present.	Raspberry tissues		36797	Adulterated, containing glucose. Is dyed.
....	.....	.....	.....	.....	.....	.....	...	.. ..	. .....	.....	....		36798	Marked 'Compound.'
.....	.....	.....	.....	....	.....	.....	...	.....	. . ..	.....	.....		36799	"
...	Is not a jam.	.....	.....	.....	.. ..	... ..	.....	.....	....	.....	.....		36800	

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).
							DISTRICT OF ST. HYACINTHE—
1909.							
July 10	Fruit Jam..	975	O. Demers, La Providence, St. Hyacinthe.	3cans.	45	The Montreal Canning & Preserving Co., Montreal.	'Peach'. ....
" 19	" ..	976	J. Dagenais & Cie, Farnham.	3 jars.	105	E. D. Smith, Winona, Ont.	'Pure Raspberry'. ..
" 20	" ..	977	G. Dupuis, St. Jean.	" .	30	Vendor	Strawberry.....
" 21	" ..	978	L. T. Trempe, Sorel.	" .	75	The Ozo Co., Montreal.	" ..... .
" 22	" ..	979	Victoriaville Grocery Store, Victoriaville	3cans.	54	Miller Bros., Baltimore, Md.	Raspberry, guaranteed pure.
" 23	" ..	981	McRae Bros., Richmond.	3 glasses.	90	Lockerby Bros., Montreal.	Strawberry, 'Wagstaff.'
Aug. 3	" ..	982	A. H. Moore & Co., Magog.	3 " .	65	Forbes Bros., Montreal.	Strawberry.....
" 4	" ..	983	A. Plamondon, St. Césaire.	3 " .	45	The Ozo Co., Montreal	Raspberry, guaranteed pure.
" 6	" ..	984	Raymond freres, St. Hyacinthe.	3 " .	90	Crosse & Blackwell, England.	Strawberry.....
" 7	" ..	985	E. Chaput, L'Egypte	3 jars.	160	Vendor	Strawberry, guaranteed pure.
							DISTRICT OF MONTREAL—
July 17	Fruit Jam..	40256	St. Louis Preserving Co., Ville St. Louis	3 jars.	40	Vendors.....	Raspberry, guaranteed pure.
" 17	" ..	40257	" " ..	3 " .	45	"	Strawberry, guaranteed pure.
" 20	" ..	40258	Mrs. Luke, Bleury St., Montreal.	3 " .	60	Vendor	Strawberry, pure Homemade.
" 20	" ..	40259	" " ..	3 " .	60	"	Raspberry, pure Homemade.
" 22	" .	40260	Richer & Page, Valleyfield, P.Q.	3 " .	75	Sugars and Canners, Ltd., Montreal.	Raspberry, pure fruit.

SESSIONAL PAPER No. 14

FRUIT JAMS.

Solids per Cent.			Results of Analysis.										Number of Sample.	Remarks and Opinion of the Chief Analyst.
Insoluble.	Soluble.	Total.	Water.	Polarization (Normal Solution). Direct.	Invert.	Difference.	Residual Cane Sugar.	Soluble matter other than Cane-Sugar.	Preservatives.	Dyes.	Microscopical Examination.			
J. C. ROULEAU, INSPECTOR.														
p. c.	p. c.	p. c.	p. c.				p. c.	p. c.						
*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	975	In bad condition. Should not have been sold. Doubtful
9·54	59·60	69 14	30·86	−14·7	−15·4	0·7	0·5	59·10	None...	None...	Raspberry tissues		976	Genuine.
5·04	51·02	56 06	43·94	+ 2·1	−16·4	18·5	13·7	37·32	" ...	" ...	Strawberry tissues		977	"
2 85	71·15	74·03	25·97	+49·5	− 3·2	52·7	38·9	32·28	" ...	Present.	" .		978	Contains glucose & a dye. Doubtful
.....	†	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	979	Not a jam
6·89	27·28	34·17	65·83	+ 0·4	− 9·3	9·7	7·1	20·18	Salicylic acid.	None...	Strawberry tissues		981	Genuine, but water content high, and contains a preservative.
6·55	56·86	63·41	36·59	+23·4	−14·5	37·9	28·0	28·86	None...	Present.	" .		982	Genuine, but dyed
3·45	67 62	71·07	28·93	+50 2	− 2·8	78·2	39·2	28·42	" ...	None...	Raspberry tissues		983	Contains glucose. Doubtful
9·20	58·28	67·48	32 52	+23·8	−16·8	40·6	29·9	28·38	" ...	" ...	Strawberry tissues		984	Genuine.
3·70	38·94	47·64	52·36	+ 8·8	−16·3	25·1	18·5	20·44	" ...	" ...	"		985	Genuine, but water content high.
J. J. COSTIGAN, INSPECTOR.														
7 52	58·98	66·50	33·50	+21·5	− 7·9	29·4	21·7	37·28	Salicylic acid.	Present.	Raspberry tissues		40256	Genuine, but preservative and dye present.
4·99	73·32	78·31	21·69	+24·8	−11·2	36·0	26·8	46·52	" .	" .	Strawberry tissues		40257	"
3 18	59·16	62·34	37·66	+ 2·5	−18·9	21·4	15·8	43 36	None...	None...	" .		40258	Genuine.
10·06	54·94	65 00	35·00	− 0·7	−18·2	17·5	13 97	40·97	" ...	" ...	Raspberry tissues		40259	"
8·78	58·20	66·98	33·02	+11·0	−19 2	30·2	22·4	35·80	Salicylic acid.	Present.	" .		40260	Genuine, but preservative and dye present.

* Peach jam. Very old, dried out. Impossible to sample it. † Canned fruit, not a jam.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).
							DISTRICT OF MONTREAL—
1909.							
July 22	Fruit Jam..	40261	Richer & Page, Valleyfield, P.Q.	3 jars.	75	Sugars and Canners, Ltd., Montreal.	Strawberry, pure fruit
" 27	" ..	40262	Alphonse Raymond, 40 Plessis, Montreal.	3 " .	105	Vendor	Strawberry, pure.. ..
" 27	" ..	40263	" " ..	3 " .	25	"	Raspberry ....
" 27	" ..	40264	Joseph Raymond & Co., St. Timothie St., Montreal.	3 " .	25	... .	" Compound..
" 27	" ..	40265	J. D. Boileau, Bonsecours St., Montreal.	3 " .	30	L. Semeteys, Montreal.	" " ..
							DISTRICT OF OTTAWA—
Aug. 7	Fruit Jam.	41269	E. C. Armand, Arnprior.	3 bots.	75	Aylmer Canning Co. Aylmer, Ont.	Raspberry. Pure.....
" 11	" .	41270	Downing Bros, Ottawa.	3 " .	45	J. G. Whyte & Son., Ottawa.	Strawberry. Pure Fruit. 'Oval' Brand.
" 11	" ..	41271	J. J. Crosbie, Ottawa	3 " .	75	Unknown	Strawberry Jam.....
" 13	" .	41272	Berman & Levinson, Ottawa.	3 " .	45	J. G. Whyte & Son., Ottawa.	Raspberry. Pure Fruit 'Oval' Brand.
" 13	" ..	41273	McDonald Bros., Ottawa.	3 " .	105	F. J. Castle Co., Ottawa.	Raspberry. Guaranteed pure. Ozo Co.
" 14	" .	41274	J. McParland & Bros Gananoque.	3 " .	45	W. G. Craig & Co., Kingston.	Strawberry preserves, guaranteed absolutely pure.
" 19	"	41275	E. A. Lisk, Eganville	3 "	60	F. J. Castle Co., Ottawa.	Raspberry... .....
" 21	"	41276	W. West, Almonte..	3 " .	75	Mathewson's Sons, Montreal.	" .....
" 23	" ..	41277	T. Lindsay Ltd., Ottawa.	3 " .	60	Bate & Sons, Ottawa	Strawberry Jam.. ...
" 24	"	41278	Chelsea Trading Co. Ltd., Ottawa.	3 " .	105	" ..	Raspberry Pure.....

SESSIONAL PAPER No. 14

FRUIT JAMS.

Solids per Cent.			Results of Analysis.											
				Polarization (Normal Solution).										
Insoluble.	Soluble.	Total.	Water.	Direct.	Invert.	Difference.	Residual Cane Sugar.	Soluble matter other than Cane Sugar	Preservatives.	Dyes.	Microscopical Examination.	Number of Sample.	Remarks and Opinion of the Chief Analyst.
J. J. COSTIGAN, INSPECTOR—*Concluded.*													
p. c.	p. c.	p. c.	p. c.				p. c.	p. c.					
4·62	64·50	69·12	30·88	+ 0·5	−21·0	21·5	15·9	48·60	Salicylic acid.	Present.	Strawberry tissues	40261	Genuine, but preservative and dye present.
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40262	Marked Compound—but indistinctly.
2·84	64·94	67·78	32·22	− 6·3	−17·3	11·0	7·9	57·04	None...	None...	Strawberry tissues	40263	Genuine.
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40264	Sold as compound
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40265	"
J. A. RICKEY, INSPECTOR.													
6·95	40·30	47·25	52·75	+ 9·1	−12·5	21·6	15·9	24·40	None...	None.	Raspberry tissues	41269	Genuine. water content high
4·84	67·34	72·18	27·82	+12·2	−20·3	32·5	24·1	43·24	Salicylic acid.	Present	Strawberry tissues	41270	Genuine, but preservative and dye present.
6·21	67·12	73·33	26·67	+23·1	−20·5	43·6	32·2	34·92	None	None	"	41271	Genuine.
10·86	55·08	65·94	34·06	− 9·6	−15·4	5·8	4·3	50·78	Salicylic acid.	"	Raspberry tissues	41272	Genuine, but preservative present.
6·10	69·66	75·76	24·24	+25·0	−10·7	35·7	24·9	44·76	"	"	"	41273	A trace of dextrine and a preservative arepresent Doubtful.
5·40	60·48	65·88	34·12	+ 8·8	−22·2	31·0	22·9	37·58	None...	"	Strawberry tissues	41274	Genuine.
3·23	74·06	77·29	22·71	+12·7	−22·0	34·0	25·8	48·26	"	Present.	Raspberry tissues	41275	Genuine, but dyed.
6·36	72·58	78·94	21·06	+ 1·8	−19·8	21·6	15·9	56·68	"	"	"	41276	"
7·67	64·94	72·61	27·39	+29·7	−11·5	41·2	29·2	35·74	"	None...	Strawberry tissues	41277	Contains a small quantity of glucose Doubtful.
5·86	61·62	67·48	32·52	+ 5·8	−19·4	25·2	18·2	43·42	Salicylic acid.	Present.	Raspberry tissues	41278	Genuine. but preservative and dye present.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).
							DISTRICT OF KINGSTON—
1909.							
Aug. 6	Fruit Jam..	41172	G. Pearson, Belleville.	3 bots.	60	Belleville Fruit Vinegar.	Strawberry..... ...
" 6	" ..	41173	" " ..	3 " .	60	" ..	Raspberry. ....
" 6	" ..	41174	Wallbridge & Clarke, Belleville.	3 " .	75	Crosse & Blackwell, London.	" .....
" 6	" ..	41175	" " ..	3 " .	75	" ..	Strawberry. .....
" 6	" ..	41176	W. D. Stephens, Port Hope.	3 " .	60	Graman, Hamilton..	Currant.....
" 6	" ..	41177	" " ..	3 " .	60	" ..	Raspberry..... .....
" 6	" ..	41178	F. H. Brown, Port Hope.	3 " .	70	Winona, Ont.....	" ....
" 6	" ..	41179	" " ..	3 " .	75	Lipton, London.....	Pineapple. .. ..
" 6	" ..	41180	J. Dunfee, Port Hope	3 " .	30	Upton, Hamilton....	Raspberry. ..... .
" 6	" ..	41181	" " ..	3 " .	30	Aylher....	Black Currant.....
							DISTRICT OF TORONTO—
Aug. 5	Fruit Jam..	41319	J. Usher & Son, St. David.	3 tins.	35	Vendors..... ..	Strawberry..... ....
" 6	" ..	41320	Canadian Canners, Ltd., Hamilton.	3 pks.	45	Simcoe Canning Co., Simcoe.	Strawberry preserves, pure.
" 6	" ..	41321	Wagstaffe, Ltd., Hamilton.	3 " .	50	Vendors..... ...	Strawberry, pure.....
" 9	" ..	41322	Mrs. A. Barthlett, Toronto.	3 " .	35	Vendor	" ....
" 10	" ..	41323	E. D. Smith, Winona	3 " .	60	"	" ....
" 6	" ..	41324	The Canada Preserving Co., Ltd., Hamilton.	3 "	48	Vendors.....	Raspberry, pure ....
" 6	" ..	41325	Aylmer Canning Co., Ltd., Hamilton.	3 "	55	"	" .....
" 6	" ..	41326	T. Upton Co., Ltd., Hamilton.	3 "	55	"	" .....
" 12	" ..	41327	The T. Eaton Co., Ltd., Toronto.	3 " .	90	Sprague, Warner & Co., Chicago, Ill.	" .....
" 13	" ..	41328	The T. A. Lytle Co., Ltd., Toronto.	3 " .	50	Vendors	" .....

SESSIONAL PAPER No. 14

FRUIT JAMS.

Solids per Cent.			Results of Analysis.										Number of Sample.	Remarks and Opinion of the Chief Analyst.
				Polarization (Normal Solution).										
Insoluble.	Soluble.	Total.	Water.	Direct.	Invert.	Difference.	Residual Cane Sugar.	Soluble matter other than Cane Sugar.	Preservatives.	Dyes.	Microscopical Examination.		
JAS. HOGAN, INSPECTOR.														
p. c.	p. c.	p. c.	p. c.				p. c.	p. c.						
5·17	66·98	72·15	27·85	+20·5	− 4·9	25·4	18·8	48·18	None...	Present.	Strawberry tissues		41172	Genuine, but dyed
5·62	51·60	57·22	42·78	+ 8·8	−20·5	29·3	21·5	30·10	" ...	" .	Raspberry tissues		41173	"
5·27	64·00	69·27	30·73	− 5·4	−18·9	13·5	9·9	54·10	" ...	None...	" .		41174	Genuine.
8·42	64·78	73·20	26·80	+ 9·8	−20·8	30·6	22·6	42·18	" . .	" ...	Strawberry tissues		41175	"
5·46	49·68	55·14	44·86	+14·0	−16·3	30·3	22·4	27·28	" ...	" ...	Black Currant tissues.		41176	"
4·77	52·90	57·67	42·33	+17·5	−21·0	38·5	28·4	24·50	" ...	" ...	Raspberry tissues		41177	"
3·90	62·86	66·76	33·24	+13·1	−20·5	33·6	24·8	38·06	" ...	" ...	" .		41178	"
5·32	49·76	55·08	44·92	+ 3·5	−15·4	18·9	13·9	35·86	" ...	" ...	Pineapple tissues		41179	"
.....	.....	.....	....	.....	...	.....	.....	....	.....	.....	.....		41180	Sold as Compound.
.....	.....	..	....	. ..	.....	.. ...	... ..	.....	.....	.....	.. ....		41181	"
H. J. DAGER, INSPECTOR.														
9·24	52·78	62·02	37·98	−14·7	−16·1	1·4	1·0	51·78	None...	None...	Strawberry tissues		41319	Genuine.
7·07	50·94	58·01	41·99	+ 3·5	−15·0	18·5	13·7	37·24	" ...	Present.	" .		41320	" but dyed
11·33	57·16	68·49	31·51	+25·5	−17·2	42·7	31·6	25·56	Salicylic acid.	" .	" .		41321	Genuine, but preservative and dye present.
2·55	66·20	68·75	31·25	− 5·2	−20·5	15·3	11·3	54·90	None...	" .	" .		41322	Genuine, but dyed
4·72	63·30	68·02	31·98	+ 7·0	−20·8	27·8	20·6	42·70	" ...	None...	" .		41323	Genuine.
8·71	45·16	53·87	46·13	+17·8	−18·5	36·3	26·8	18·36	" ...	" ...	Raspberry tissues.		41324	Genuine; water content high.
6·74	62·64	69·38	30·62	+ 7·4	−18·9	26·0	19·4	43·24	" ...	" ...	" .		41325	Genuine.
9·19	39·94	49·13	50·87	+ 8·9	−17·3	26·2	19·4	20·54	" ...	" ...	" .		41326	" but water content high.
4·97	62·66	67·63	32·37	− 5·2	−19·2	14·0	10·3	52·36	" ...	" ...	" .		41327	Genuine.
8·04	61·14	69·18	30·82	+32·5	−18·7	51·2	37·9	23·24	" ...	Present.	" .		41328	" but dyed

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
							DISTRICT OF LONDON—
1909.							
July 21	Fruit Jam..	30683	A. McCrea, Guelph.	3 jars.	75	E. D. Smith, Winona, Ont.	Strawberry .....
" 21	" ..	30684	Geo. Williams, Guelph.	3 " .	60	Upton & Co., Hamilton.	" ....
" 23	" ..	30689	A. Beattie & Co., Stratford.	3 " .	75	Rose Leplant, Montreal.	" .. ....
" 23	" ..	30690	Frank Lloyd, Stratford.	3 " .	45	J. Littell & Co., Toronto.	Raspberry... . .....
" 23	" ..	30691	James Lloyd, Stratford.	3 " .	45	Vendor.	Strawberry. ... .
" 23	" ..	30694	Barnsdale Trading Co., Stratford.	3 " .	45	Simcoe Canning Co., Simcoe.	" ....
" 26	" ..	30699	R. H. Cutt, Goderich	3 " .	30	Elliot, Mar & Co., London, Ont.	" ....
" 21	" ..	30805	Richard Smith, Seaforth.	3 cups	45	John Slone, Toronto	Raspberry. .....
" 27	" ..	30808	A. G. Ault, Seaforth	3 jars.	30	Aylmer Canning Co., Aylmer, Ont.	Currant..... .....
" 29	" ..	30810	H. Bartleff, Clinton.	3 " .	30	Upton & Co., Hamilton	GooseberryCompound
" 29	" ..	30811	" " .	3 cups	45	Unknown.....	Raspberry.....
							DISTRICT OF WINDSOR—
July 26	Fruit Jam..	35985	Jas. Mahon, London, East.	3 jars.	45	Simcoe Canning Co., Simcoe.	Strawberry.....
" 26	" ..	35987	Elliott Mar & Co., London.	3 " .	50	J. W. Windsor, Montreal.	Raspberry.....
" 26	" ..	35988	" ..	3 " .	50	" ..	Strawberry.....
" 26	" ..	35989	T. A. Rowat, London	3 " .	75	Crosse & Blackwell, London, Eng.	Raspberry. .....
" 26	" ..	35990	" ..	3 " .	75	Goodwillie & Son., Welland.	Strawberry.....
" 26	" ..	35991	Gorman Eckert & Co. London.	3 " .	....	Vendors.....	" .. ..

SESSIONAL PAPER No. 14

FRUIT JAM.

Solids per Cent.			Results of Analysis.										Number of Sample.	Remarks and Opinion of the Chief Analyst.
Insoluble.	Soluble.	Total.	Water.	Polarization (Normal Solution). Direct.	Polarization (Normal Solution). Invert.	Polarization (Normal Solution). Difference.	Residual Cane Sugar.	Soluble matter other than Cane Sugar.	Preservatives.	Dyes.	Microscopical Examination.		
T. KIDD, INSPECTOR.														
p. c.	p. c.	p. c.	p. c.				p. c.	p. c.						
6·61	50·20	56·81	43·19	- 2·1	-21·9	19·8	14·6	35·60	None...	None...	Strawberry tissues.		30683	Genuine.
6·59	58·84	65·43	34·57	+ 7·3	-18·4	25·7	19·0	39·84	" ...	" ...	" .		30684	"
2·88	70·42	73·30	26·70	+15·6	-12·2	27·8	19·5	50·92	" ...	" ...	" .		30689	"
.....	...	.....	..	....	.....	.....	...	.....	.....	.....	.....		30690	Sold as Compound.
3·22	59·16	62·38	37·62	0·0	-16·1	16·1	11·9	47·26	None...	None...	Strawberry tissues.		30691	Genuine.
7·22	66·06	73·28	26·72	+37·1	-22·0	59·1	43·7	22·36	" ...	" ...	" .		30694	"
.....	...	.....	.....	.....	....	.....	.....	.....	.. ....	.....	.....		30699	Sold as Compound.
9·37	56·08	65·45	34·55	-13·4	-18·5	5·1	3·7	52·38	Salicylic acid.	Present.	Raspberry tissue.		30805	Genuine, but contains preservative and dye.
... ..	.....	.....	. ..	.. ..	.....	.....	.....	.. ...	.....	....	.....		30808	Sold as Compound.
.....	....	.. .	.....	.....	.....	....	.....	...	.....	.....	.....		30810	"
6·74	59·24	65·98	34·02	+ 0·7	-17·3	18·0	13·3	45·94	None...	None...	Strawberry tissues.		30811	Genuine.
JNO. TALBOT, INSPECTOR.														
6·61	65·30	71·91	28·09	+30·0	-22·9	52·0	38·6	26·70	None...	None...	Strawberry tissues		35985	Genuine.
7·76	62·68	70·44	29·56	0·0	-23·1	23·1	17·0	45·68	" ...	" ...	Raspberry tissues		35987	"
4·75	66·90	71·65	28·35	+31·9	- 5·2	37·1	28·5	38·40	" ...	" ...	Strawberry tissues		35988	A trace of dextrine. Doubtful
8·94	58·90	67·84	32·16	0·0	-19·1	19·1	14·0	44·90	" ...	" ...	Raspberry tissues		35989	Genuine.
7·51	44·74	52·25	47·75	+ 0·4	-13·3	13·7	10·0	34·74	Salicylic acid.	Present.	Strawberry tissues		35990	Genuine, but contains a preservative and a dye: water content is high.
5·41	72·68	78·09	21·91	+30·6	-14·7	45·3	33·5	39·30	None...	" .	" .		35991	A trace of dextrine and a dye. Doubtful

BULLETIN No. 194—

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).
DISTRICT OF WINDSOR—							
1909.							
July 27	Fruit Jam..	35992	C. A. O'Neill, Ingersoll.	3 " .	25	Upton & Co., Hamilton.	Orange Marmalade...
" 27	" ..	35993	F. Williams, Woodstock.	3 " .	75	W. P. Hartly, London, Eng.	Raspberry.... .. .
" 27	" ..	35994	Poole & Co., Woodstock.	3 " .	38	E. D Smith, Winona Ont.	Green Gage... .. ...
" 28	" ..	35997	McCormick Mfg. Co. London.	3 " .	35	Vendors	Red Currant.....
DISTRICT OF MANITOBA—							
July 21	Fruit Jam..	39751	G. F. & J. Galt, Winnipeg.	3 pkgs	60	Vendors	Raspberry.....
" 21	" ..	39752	" ..	3 " .	55	"	Strawberry.....
" 21	" ..	39753	K. MacKenzie & Co. Winnipeg.	3 " .	60	Crosse & Blackwell, London, Eng.	" .....
" 21	" ..	39754	The Codville Co., Winnipeg.	3 " .	55	W. P. Hartley, Liverpool & London.	" .....
" 21	" ..	39755	" ..	3 " .	50	John Buchanan & Bros. Ltd., Glasgow.	Raspberry. ....
" 22	" ..	39756	A. Macdonald & Co. Winnipeg.	3 " .	49	E. D. Smith, Winona Ont.	" ....
" 22	" ..	39757	" ..	3 " .	56	Maconachie Bros., London, Eng.	" . ...
" 22	" ..	39758	" ..	3 " .	45	E. D. Smith, Winona Ont.	Strawberry.....
22	" ..	39759	Thos. H. Lock & Co. Winnipeg.	3 " .	50	Robertson's, Paisley, Manchester & London.	" ....
22	" ..	39760	" ..	3 " .	50	Miller & Co., Belfast Ireland.	" .....
DISTRICT OF CALGARY—							
Aug. 3	Fruit Jam..	35588	L. B. Cochrane, Medicine Hat.	3 bots.	100	Chevies & Sons, Ltd., Cambridge, Eng.	Strawberry.....
" 3	" ..	35589	D. Milne Co., Ltd..	3 " .	90	Crosse & Blackwell, London, Eng.	Raspberry.....
" 3	" ..	35590	R. Dunn, Medicine Hat.	3 " .	100	Empress Mfg. Co., Vancouver.	Strawberry..... .

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FRUIT JAMS.

Solids per Cent.			Results of Analysis.											
				Polarization (Normal Solution).										
Insoluble.	Soluble.	Total.	Water.	Direct.	Invert.	Difference.	Residual Cane Sugar.	Soluble matter other than Cane Sugar.	Preservatives.	Dyes.	Microscopical Examination.	Number of Sample.	Remarks and Opinion of the Chief Analyst.
JNO. TALBOT, INSPECTOR—*Concluded.*													
p. c.	p. c.	p. c.	p. c.				p. c.	p. c					
3·14	62·70	65·84	34·16	+41·3	−19·2	60·5	44·8	17·90	None...	None...	Orange marmalade.	35992	Genuine.
4·06	67 84	71·90	28·10	+11·2	−21·7	32·9	24·2	43 64	" ...	" ...	Raspberry tissues	35993	"
4 93	58·00	62·93	37·07	− 6·3	−13·5	7·2	5·3	52 70	" ...	" ...	Plum tissues	35994	"
10·47	59·04	69·51	30·49	+ 2·3	− 5·2	7·5	5·5	53·54	" ...	" ...	Red Currant tissues.	35997	"
A. C. LARIVIERE, INSPECTOR.													
3·31	69·06	72 37	27 63	+19·6	−21·0	40·6	30·0	39·06	None...	Present.	Raspberry tissues	39751	Genuine, but dyed.
2·52	64 06	66·58	33·42	+30·9	−18·4	49·3	36·4	27·66	" ...	" .	Strawberry tissues	39752	"
5·70	61·74	67 44	32·56	+22·4	−18·9	41·3	30·5	31·24	" ...	None...	" .	39753	Genuine.
4 01	79·44	83·45	26·55	+26·9	−19·8	46·7	34·5	44·94	" ...	" ...	" .	39754	"
6·06	73 34	79·40	20 60	+15·7	−18·9	34·6	25·7	47 64	" ...	" ...	Raspberry tissues	39755	"
3 21	62 67	65·88	34 12	+14·0	−24·5	38·5	28·5	34·17	" ...	" ...	" .	39756	"
4·55	70 36	74·91	25 09	+ 9·1	−24·5	33·6	24·8	45·56	" ...	Present.	" .	39757	" but dyed.
4·08	51·14	55 22	44·78	− 1·8	−20·8	19·0	14·1	37·04	" ..	None..	Strawberry tissues	39758	Genuine.
5·78	66·38	72·16	27 84	+16·6	−22·7	39·3	29·1	37·28	" ...	Present.	" .	39759	" but dyed.
3·61	70·56	74·17	25·83	+18·7	− 8·4	27·1	20·0	50·56	" ...	None...	" .	39760	Genuine.
R. W. FLETCHER, INSPECTOR.													
4 98	69·58	74·56	25·44	+21·5	−19·9	41·4	30·6	38·78	None...	None...	Strawberry tissues.	35588	Genuine.
6·56	61·50	68·06	31 94	− 3·3	−19·2	15·9	11·7	49·80	" ...	" ...	Raspberry tissues.	35589	"
5·80	66·86	72·66	27·34	+30·5	−22·2	52·7	37·9	28·96	Benzoic acid.	Present.	Strawberry tissues.	35590	Genuine, but with preservative and a dye.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
						DISTRICT OF CALGARY—	
1909							
Aug. 5	Fruit Jam..	35591	Hudson Bay Co., Lethbridge.	3 tins.	75	Robertson, Paisley, Manchester and London.	Raspberry Jam . . .
" 5	" ..	35592	H. Bentley Co., Lethbridge.	3 bots.	75	Wagstaff, Ltd., Hamilton.	Strawberry..... .
" 10	" ..	35593	Douglas Bros., Edmonton.	3 "	100	Thos. Lipton, London, Eng.	" .....
" 10	" ..	35594	Hudson Bay Co., Edmonton.	3 "	60	Simcoe Canning Co., Simcoe.	" . . . . .
" 11	" ..	35595	Acme Co., Ltd., Edmonton.	3 "	90	Wagstaff, Ltd., Hamilton.	Raspberry ....
" 10	" ..	35596	J. H. Morris & Co., Edmonton.	3 "	90	Empress Mfg. Co., Vancouver.	Strawberry... .....
" 11	" ..	35597	L. & W. Campbell, Edmonton.	3 "	75	Crosse & Blackwell, London, Eng.	Raspberry... ..... .
						DISTRICT OF VANCOUVER—	
July 26	Fruit Jam..	37696	Empress Mfg. Co., Vancouver.	3 pks.	75	Vendors..	Raspberry, guaranteed absolutely pure.
" 26	" ..	37697	R. Schilling, Vancouver.	3 "	70	Jas. Robertson & Sons, Paisley, Scot	Strawberry .... .
" 26	" ..	37698	Kelly, Douglas & Co., Vancouver.	3 "	60	Jas. Keiller & Sons, Ltd., Dundee.	" ....
" 26	" ..	37699	Hudson Bay Co., Vancouver.	3 tins.	40	Crosse & Blackwell, London, Eng.	" . .....
" 26	" ..	37700	E. W. Leeson, Vancouver.	3 "	100	Climax Mfg. Co., Vancouver.	" .....
" 26	" ..	37701	W. H. Malkin & Co., Vancouver.	3 jars.	45	Chivers & Sons, Ltd., Cambridge.	Raspberry, with fruit jelly.
" 26	" .	37702	W. J. McMillan & Co., Vancouver.	3 tins.	45	Taylor Bros., Sydney, Australia.	Raspberry, guaranteed absolutely pure.
" 27	" ..	37703	Adams & Dean, New Westminster.	3 "	50	Sugars and Canners, Ltd., Montreal.	Strawberry... .. ..
" 28	" ..	37704	H. A. Edgett & Co., Vancouver.	3 "	100	Vendors	" .. . .
" 28	" ..	37705	Woodwards' Dept. Stores, Vancouver.	3 "	75	C. & E. Morton, London, Eng.	Raspberry. .....

SESSIONAL PAPER No. 14

FRUIT JAMS

Solids per Cent.			Results of Analysis.											Remarks and Opinion of the Chief Analyst.
				Polarization (Normal Solution.)										
Insoluble.	Soluble.	Total.	Water.	Direct.	Invert.	Difference.	Residual Cane Sugar.	Soluble matter, other than cane sugar.	Preservatives.	Dyes.	Microscopical Examination.	No. of Sample.	
R. W. FLETCHER, INSPECTOR—*Concluded.*														
p.c.	p.c.	p.c.	p.c.				p.c.	p.c.						
3·76	65·40	69·16	30·84	+ 6·1	−21·0	27·1	20·0	45·40	None...	None...	Raspberry tissues.	35591	Genuine.
6·38	59·26	65·64	34·36	+32·5	−19·6	52·1	38·6	20·66	Salicylic acid.	Present.	Strawberry tissues.	35592	" but with preservative and a dye.
3·20	67·20	70·40	29·60	+ 1·7	−20·1	21·8	16·2	51·00	None...	None...	" .	35593	Genuine.
8·92	57·18	66·10	33·90	+29·0	−19·2	48·2	35·7	21·48	" ...	" ...	" .	35594	"
4·47	63·34	67·81	32·19	+21·0	−20·1	41·1	30·3	33·04	Salicylic acid.	Present.	Raspberry tissues.	35595	" but preservative and a dye present.
3·61	66·42	70·03	29·97	+32·7	−21·5	54·2	40·0	26·42	None ..	" .	Strawberry tissues.	35596	Genuine, but dyed.
4·85	59·64	64·49	35·50	+ 4·4	−18·2	22·6	16·7	42·94	" ...	None...	Raspberry tissues.	35597	Genuine.
J. F. POWER, INSPECTOR.														
3·57	71·76	75·33	24·67	+ 1·7	−21·5	23·2	17·2	54·56	None...	None...	Raspberry tissues.	37696	Genuine.
3·71	66·78	70·49	29·51	+19·2	−19·4	38·6	28·6	38·18	" ...	Present.	Strawberry tissues.	37697	" but contains a dye.
11·00	63·26	74·26	25·74	+ 0·4	−16·6	17·0	12·5	50·76	" ...	None...	" .	37698	Genuine.
3·95	63·70	67·70	32·39	+ 9·5	−15·4	24·9	18·4	45·30	" ...	" ...	" .	37699	"
.....	.....	...	...	.....	.....	....	.....	.....	.....	.....	.....	37700	Sold as mixture.
5·15	66·64	71·79	28·21	− 7·4	−22·6	15·2	11·3	55·34	None...	None...	Raspberry tissues.	37701	Genuine.
7·83	58·82	66·65	33·35	+ 2·6	−18·5	21·1	15·6	43·22	" ...	" ...	" .	37702	"
3·85	71·54	75·39	24·61	− 2·1	−15·4	13·3	9·8	61·74	Salicylic acid.	Present.	Strawberry tissues.	37703	Genuine, but contains a preservative and dye.
6·34	61·16	67·50	32·50	+ 2·8	−19·2	22·0	16·3	44·86	None...	None...	" .	37704	Genuine.
4·78	68·04	72·82	27·18	+17·8	−23·4	41·2	30·5	37·54	" ...	Present.	Raspberry tissues.	37705	" but dyed.

BULLETIN No. 194—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
DISTRICT OF VICTORIA—							
1909							
Aug. 5	Fruit Jam..	41526	Windsor Grocery Co., Victoria, B.C.	3 pks.	90	Crosse & Blackwell, London, Eng.	Raspberry. .....
" 5	" ..	41527	Fred. Carne, Victoria, B.C.	3 " .	75	Wm. P. Hartley, London, Eng.	Strawberry .....
" 5	" ..	41528	Saunders Grocery Co., Ltd., Victoria, B.C.	3 " .	75	Empress Mfg. Co., Vancouver.	Raspberry, 'Empress
" 5	" ..	41529	" . .	3 " .	75	" ..	Strawberry, " .
" 6	" ..	41530	D. H. Ross & Co., Victoria, B.C.	3 " .	75	James Robertson & Sons, Paisley, Scot.	" 'Golden Shred.'

SESSIONAL PAPER No. 14

FRUIT JAMS.

Solids per Cent.			Results of Analysis.											Remarks and Opinion of the Chief Analyst.
Insoluble.	Soluble.	Total.	Water.	Polarization (Normal Solution.) Direct.	Invert.	Difference.	Residual Cane Sugar.	Soluble matter, other than cane sugar.	Preservatives.	Dyes.	Microscopical Examination.	No. of Sample.	
D. O'SULLIVAN, INSPECTOR.														
p.c.	p.c.	p.c.	p.c.				p.c.	p.c.					
10·50	60·08	70·58	29·42	+12·2	−19·4	31·6	23·0	37·08	None...	None...	Raspberry tissues.	41526	Genuine.
7·37	55·36	62·73	37·27	+18·5	−18·4	36·9	27·3	28·06	" ...	" ...	Strawberry tissues.	41527	"
3·99	67·20	71·19	28·81	+21·7	−19·2	40·9	30·3	36·90	" ..	" ..	Raspberry tissues	41528	"
5·62	69·56	75·18	24·82	+23·6	−22·2	45·8	33·9	35·66	" ...	Present.	Strawberry tissues.	41529	" but dyed.
8·21	64·14	72·35	27·65	+26·8	−21·9	48·7	35·9	28·24	Salicylic acid.	" .	" .	41530	Genuine, but dyed and contains a preservative.

APPENDIX P.

BULLETIN No. 195—CREAM OF TARTAR.

OTTAWA, December 18, 1909.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I beg to hand you a report upon 211 samples collected as Cream of Tartar, in September and October of this year. The subjoined table gives details of collection and of the results of analysis :—

Inspectoral Districts.	Genuine.	Adulterated.	Lost.	Total.
Nova Scotia	15	0	0	15
New Brunswick	11	3	1	15
Quebec	11	4	0	15
St. Hyacinthe	9	6	0	15
Montreal	9	6	0	15
Ottawa	14	1	0	15
Kingston	14	1	0	15
Toronto	11	4	0	15
London	16	0	0	16
Windsor	12	3	0	15
Manitoba	14	0	1	15
Calgary	15	0	0	15
Vancouver	14	1	0	15
Victoria	15	0	0	15
	180	29	2	211

One sample from New Brunswick was lost, owing to a train wreck; and one sample from Manitoba consisted of crushed sugar, sold by mistake.

All the inspectoral districts are represented except Prince Edward Island. The inspector for this district was absent, on leave.

It will be observed that more than 85 per cent of the samples collected prove to be genuine. Of this number, 50 samples, or nearly 24 per cent of the entire collection reach the standard of purity (97½) per cent named in the British Pharmacopœia. Of genuine samples which fail to reach this high standard, only 16 fall below 90 per cent purity, and 3 below 88 per cent of purity. The lowest percentage of purity found in any genuine sample is 86.

I have already (Bull. 143) drawn your attention to the reasonableness of a somewhat lower standard for Commercial Cream of Tartar, as used in baking, &c., than that fixed by the British Pharmacopœia for the article as used in dispensing. This last is known as purified Cream of Tartar. The impurities present in crude argols, while reducing the quality of the article directly ground from them, are not harmful to health; and so long as they are not present in sufficient amount to destroy the value of the article as a baking material, they must be regarded as legitimate.

I believe that an examination of the report now placed in your hands will justify me in advising that a degree of purity represented by 90 per cent of actual bi-tartrate

of potash, be made a legal minimum for Cream of Tartar. Only 16 samples, or 9 per cent of the number found to be genuine, fall below 90 per cent of purity; and a little care in the selection of the argols, and other forms of raw material to be ground, would easily prevent such grades as are represented by 86 to 89 per cent of purity from coming on the retail market.

Cream of Tartar has been inspected on several previous occasions by this department, and it is interesting to note a general improvement in the quality of the article.

Date of Inspection.	Percentage below 90 per cent of purity.
1887	73
1889	90
1896	30
1900	60
1905	62
1907	21
1909 (May)	28
Present report	9

The substitution of alum, acid phosphate of lime, and mixtures of these, with starch, &c., cannot but be regarded as a fraud, when the mixture is sold as Cream of Tartar. Some of the substitutes for Cream of Tartar are possibly unobjectionable on the score of healthfulness, and their efficiency in bread-making may be granted. They are of course intended to be sold at a lower price than Cream of Tartar. It will be seen by referring to the present report as well as to previous reports that the retail price of Cream of Tartar seems to vary from 30 to 40 cents a pound. It will be noted that very few of the substitutes for Cream of Tartar are offered at a lower price than this. If Cream of Tartar substitutes, or so-called Compound Cream of Tartars, are legally recognized, it can only be on condition of their being distinctly labelled to conform with Section 24 (d) of the Adulteration Act.

I beg to recommend the publication of this report as Bulletin 195.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
DISTRICT OF NOVA SCOTIA—						
1909.						
Oct. 5	Cream of Tartar.	41801	Forristall & Co., Halifax, N.S.	3 pkgs.	30	John P. Mott & Co., Halifax, N.S.
" 5	" " ..	41802	J. L. Archibald & Son, Halifax, N.S.	3 " ..	30	" " ..
" 5	" " ..	41803	W. J. Hopgood & Son, Halifax, N.S.	3 " ..	30	W. H. Schwartz & Sons, Halifax, N.S.
" 5	" " ..	41804	Jas. Hogan, Halifax, N.S...	8 ozs....	20	J. P. Mott & Co., Halifax, N.S.
" 5	" " ..	41805	J. D. Stewart, Halifax, N.S.	8 "	20	W. H. Schwartz & Sons, Halifax, N.S.
" 5	" " ..	41806	E. Donahoe & Son, Halifax, N.S.	8 "	18	" " ..
" 5	" " ..	41807	R. B. Adams & Co., Halifax, N.S.	3 pkgs..	25	John P. Mott & Co., Halifax, N.S.
" 6	" " ..	41808	J. F. Crowe & Co., Halifax, N.S.	3 " ..	18	" " ..
" 6	" " ..	41809	Bauld Bros. & Co., Halifax, N.S.	3 " ..	18	W. H. Schwartz & Sons, Halifax, N.S.
" 6	" " ..	41810	John Tobin & Co., Halifax, N.S.	3 " ..	22	John P. Mott & Co., Halifax N.S.
" 6	" " ..	41811	John P. Mott & Co., Halifax, N.S.	3 " ..	....	Vendors..... ....
" 6	" " ..	41812	W. E. Crowe & Co., Halifax, N.S.	8 ozs....	20	Todhunter & Mitchell, Toronto.
" 6	" " ..	41813	B. H. Dodge, Kentville, N.S.	3 pkgs..	20	Nat. Drug & Chemical Co., Halifax, N.S.
" 8	" " ..	41814	Wentworth Stores, Windsor, N.S.	8 ozs....	....	W. H. Schwartz & Sons, Halifax, N.S.
" 8	" " ..	41815	M. N. Davison, Windsor, N.S.	3 pkgs..	25	White Swan Spice & Cereals Co., Ltd., Toronto.
DISTRICT OF NEW BRUNSWICK—						
Sept. 7	Cream of Tartar.	39538	The Two Barkers, Ltd., St. John, N.B.	½ lb	15	Vendors..... ....
" 7	" " ..	39539	M. E. Grass, St. John, N.B.	½ "	18	Robert Greig Co., Toronto ..
" 8	" " ..	39540	G. E. Barbour Co., Ltd., St. John, N.B.	½ "	12	Vendors.....
" 15	" " ..	39541	Vanwart Bros., St. John, N.B.	½ "	15	Geo. E. Barbour Co., Ltd., St. John, N.B.
" 21	" " ..	39542	W. R. Logan, Fredericton, N.B.	½ "	15	A. F. Randolph & Son, Fredericton, N.B.
" 22	" " ..	39543	The Yerxa Grocery Co., Woodstock, N.B.	½ "	13	The Robert Greig Co., Ltd., Toronto.
" 23	" " ..	39544	D. R. Bedell, Andover, N.B.	3 pkgs..	21	Geo. E. Barbour Co., Ltd., St. John, N.B.
" 24	" " ..	39545	Weaver & Co., Perth, N.B..	½ lb	15	Baird & Peters, St. John, N.B.

SESSIONAL PAPER No. 14

CREAM OF TARTAR.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.										No. of Sample.	Remarks and Opinion of the Chief Analyst.
	Preliminary Examination.				Determinations.							
	Starch.	Sulphates.	Phosphates.	Acidity.	Starch.	Kind.	Alumnia.	Phosphoric Acid.	Sulphuric Acid.	Calcium Oxide.		
R. J. WAUGH, INSPECTOR.												
	p. c.	p. c.	p. c.	p. c.	p. c.		p. c.	p. c.	p. c.	p. c.		
Labelled pure	None	None.	None.	486	.....	.....	.....	.....	.....	. .	41801	Genuine, 91 p. c. purity.
" ..	" .	" .	" .	466	.....	.....	.....	.....	.....	2·20	41802	Genuine, 88 p. c. purity.
Peerless. Labelled pure.	" .	" .	" .	490	.....	.....	.....	.....	.....	.....	41803	Genuine, 92 p. c. purity.
Labelled pure	" .	" .	" .	490	.....	.....	.....	.....	.....	.....	41804	Genuine, 92 p. c. purity.
Labelled strictly pure.	" .	" .	" .	484	...	.....	.....	.....	.....	.....	41805	Genuine, 91 p. c. purity.
..... .	" .	" .	" .	480	.....	.....	.....	.....	.....	.....	41806	Genuine, 90 p. c. purity.
Labelled pure.	" .	" .	" .	490	.....	.....	.....	.....	.....	.....	41807	Genuine, 92 p. c. purity.
" ..	" .	" .	"	504	.....	.....	.....	.....	.....	.....	41808	Genuine, 94 p. c. purity.
Peerless. Labelled strictly pure.	" .	" .	" .	488	.....	.....	.....	.....	.....	.....	41809	Genuine, 92 p. c. purity.
Labelled pure.	" .	" .	" .	488	.....	.....	.....	.....	.....	.....	41810	Genuine, 92 p. c. purity.
" ..	" .	" .	" .	484	.....	.....	.....	.....	.....	.....	41811	Genuine, 91 p. c. purity.
.....	" .	" .	" .	508	.....	.....	.....	.....	.....	.....	41812	Genuine, 96 p. c. purity.
"Sovereign." Labelled pure.	" .	" .	" .	484	.....	.....	.....	.....	.....	.....	41813	Genuine, 91 p. c. purity.
....	" .	" .	" .	484	.....	.....	.....	.....	.....	..	41814	Genuine, 91 p. c. purity.
Labelled pure.	" .	" .	" .	478	.....	.....	.	.....	.....	2·00	41815	Genuine, 89 p. c. purity.
J. C. FERGUSON, INSPECTOR.												
.....	None.	None.	None.	490	.....	.....	.....	.....	.....	.....	39538	Genuine, 92 p. c. purity.
.....	Pres't	Pres't	" .	485	6·18	Maize	1·20	None.	9·68	6·80	39539	Adulterated.
"Acorn" brand	None.	None.	" .	534	.....	.....	.....	.....	.....	.....	39540	Up to B. P. standard of purity.
.....	" .	" .	" .	480	.....	.....	.....	.....	.....	.....	39541	Genuine, 90 p. c. purity.
.....	" .	" .	" .	495	.....	.....	.....	.....	.....	.....	39542	Genuine, 93 p. c. purity.
.....	Pres't	Pres't	" .	470	5·52	Maize	3.80	None.	12.70	9·00	39543	Adulterated.
"Acorn" brand strictly pure Cream of Tartar.	None.	None.	" .	485	.....	.....	.....	.....	.....	.....	39544	Genuine, 91 p. c. purity.
"Reindeer" brand.	" .	None.	" .	480	.....	.....	.....	.....	.....	.....	39545	Genuine, 90 p. c. purity.

BULLETIN No. 195—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.
			DISTRICT OF NEW BRUNSWICK—			
1909.						
Oct. 5	Cream of Tartar.	39546	W. B. McKay & Co., Sussex, N.B.	½ lb....	15	G. E. Barbour Co., Ltd., St. John, N.B.
" 6	" " ..	39547	G. A. Robertson, Moncton, N.B.	½ "	15	F. P. Reid & Co., Moncton, N.B.
" 7	" " ..	39548	Thos. Russell, Newcastle, N.B.	½ "	15	Baird & Peters, St. John, N.B.
" 7	" " ..	39549	James Mailer, Newcastle, N.B.	½ "	20	A. F. Randolph & Son, Fredericton, N.B.
" 9	" " ..	39550	S. Holdengraber, Bathurst, N.B.	½ "	15	F. P. Reid & Co., Moncton, N.B.
" 9	" " ..	39551	A. N. Desbrisay, Bathurst, N.B.	½ "	15	The Robert Greig Co., Ltd., Toronto.
" 11	" " ..	39552	McKenzie & Trueman, Campbellton, N.B.	½ " ...	20	Unknown .....
			DISTRICT OF QUEBEC—			
Sept. 6	Cream of Tartar.	36607	D. Lupien, Pont Maskinongé.	½ lb....	20	L. Chaput Fils & Cie., Montreal.
" 6	" .	36608	T. A. Bernier, Pont Maskinongé.	½ " ..	20	Lacaille & Gendreau, Montreal..
" 6	" ..	36609	T. A. Deziel, Maskinongé...	½ " ..	20	L. Chaput Fils & Co., Montreal.
" 6	" ..	36610	D. Vertefeuille, Maskinongé.	½ " ..	15	Unknown. .....
" 6	" ..	36611	L. E. G. Dugas, Maskinongé.	½ " ..	18	L. Chaput Fils & Cie., Montreal.
" 6	" ..	36612	O. Adam Fils, Maskinongé..	½ " ..	20	" " .....
" 7	" ..	36613	D. Toupin, St. Justin.....	½ " ..	20	Unknown..... .....
" 7	" ..	36614	W. H. Gagne, St. Justin....	½ " ..	20	" .....
" 7	" ..	36615	Lazare Vilneuve, St. Justin.	½ " ..	20	Robitaille, Montreal.....
" 7	" ..	36616	Augustin & Clement, St. Justin Bois, Blanc.	½ " ..	15	Lacaille & Gendreau, Montreal.
" 7	" ..	36617	F. Marchand, St. Justin....	½ " ..	20	Unknown ....
" 8	" ..	36618	Jos. Bergeron, St. Ursule....	½ " ..	20	Unknown.. . . . .
" 8	" ..	36619	P. Lessard, St. Ursule.....	½ " ..	20	Unknown. ... .
" 8	" ..	36620	U. Boucher, St. Ursule	½ " ..	20	Lacaille & Gendreau, Montreal.
" 8	" ..	36621	T. E. Lupien, St. Ursule....	3 pkgs..	30	Laporte, Martin & Cie., Montreal.

SESSIONAL PAPER No. 14

CREAM OF TARTAR.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.										No. of Sample.	Remarks, and Opinion of the Chief Analyst.
	Preliminary Examination.				Determinations.							
	Starch.	Sulphates.	Phosphates.	Acidity.	Starch.	Kind.	Alumnia.	Phosphoric Acid.	Sulphuric Acid.	Calcium Oxide.		
J. C. FERGUSON, INSPECTOR—*Concluded.*												
	p. c.	p. c.	p. c.	p. c.		p. c.	p. c.	p. c.	p. c.	p. c.		
....	Lost	in tra	nsit.	.....	.....	.....	.....	.....	.....	.....	39546	Lost in transit.
.....	None.	None.	None.	466	.....	.....	.....	.....	.....	2·20	39547	Genuine, 88 p. c. purity.
"Reindeer" brand.	" .	" .	" .	484	.....	.....	.....	.....	.....	.....	39548	Genuine, 91 p. c. purity.
Labelled pure ground Cream of Tartar.	" .	" .	" .	484	.....	.....	.....	.....	.....	.....	39549	Genuine, 91 p. c. purity.
.....	" .	" .	" .	474	.....	.....	.....	.....	.....	.....	39550	Genuine, 89 p. c. purity.
"White Swan" Mills.	" .	" .	" .	494	.....	.....	.....	.....	.....	1·00	39551	Genuine, 93 p. c. purity.
....	" .	" .	Pres't	514	.....	.....	.....	9.30	.....	.....	39552	Adulterated.
E. BELAND, INSPECTOR.												
.....	None.	None.	None	532	.....	.....	.....	.....	.....	.....	36607	Up to B.P. standard of purity.
.....	"	"	"	475	.....	.....	.....	.....	.....	.....	36608	Genuine, 89 p. c. purity.
.....	"	"	"	485	.....	.....	.....	.....	.....	.....	36609	Genuine, 91 p. c. purity.
.....	Present.	Present.	Present.	300	44.84	Maize	1·40	12·00	3·80	9·80	36610	Adulterated.
.....	None.	None.	None	490	.....	.....	.....	.....	.....	.....	36611	Genuine, 92 p. c. purity.
.....	"	"	"	485	.....	.....	.....	.....	.....	.....	36612	Genuine, 91 p. c. purity.
.....	"	"	"	490	.....	.....	.....	.....	.....	.....	36613	Genuine, 92 p. c. purity.
.....	"	"	"	495	.....	.....	.....	.....	.....	.....	36614	Genuine, 93 p. c. purity.
.....	Present.	Present.	Present.	225	53·22	Maize	5·20	3·80	6·38	4·30	36615	Adulterated.
.....	None.	None.	None.	485	.....	.....	.....	.....	.....	.....	36616	Genuine, 91 p. c. purity.
.....	"	"	"	495	.....	.....	.....	.....	.....	.....	36617	Genuine, 93 p. c. purity.
.....	"	Present.	Present.	575	None.	None.	2·77	16·90	25·75	29·90	36618	Adulterated.
.....	Present.	"	"	305	47·58	Maize	0 39	11·80	5·01	14·10	36619	Adulterated.
....	None.	None.	None.	490	.....	.....	.....	.....	.....	.....	36620	Genuine, 92 p. c. purity.
.....	"	"	"	530	.....	.....	.....	.....	.....	.....	36621	Up to B. P. standard of purity.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF ST. HYACINTHE—			
1909.						
Sept. 15	Cream of Tartar.	1201	N. Lindsay, Drummondville	½ lb.	18	Lacaille & Gendron, Montreal.
" 15	"	1202	Archambault & Guertin, Actonvale.	½ "	20	L. Chaput Fils & Cie., Montreal.
" 15	"	1203	F. X. Lamothe, Upton	3 pkgs.	30	E. W. Gillett Co., Limited, Toronto.
" 16	"	1204	A. C. Gilmore, Waterloo	½ lb.	12	Unknown.
" 16	"	1205	S. N. Fontenault, Marieville.	½ "	20	
" 17	"	1206	A. E. D'Artois & Fils, Farnham.	½ "	20	Herron, Leblanc & Cie., Montreal.
" 22	"	1207	C. Fortier, Lac Megantic	½ "	20	Unknown.
" 22	"	1208	M. J. Smith, Lac Megantic	½ "	15	"
" 22	"	1209	T. McCrea & Co., Cookshire	3 pkgs.	30	White Swan Spices & Cereals, Ltd., Toronto.
" 23	"	1210	T. Roberge, Sherbrooke	3 "	30	S. H. & A. S. Ewing, Montreal.
" 23	"	1211	Vaughan Bros., Magog	3 "	30	Herron, Leblanc, Ltd., Montreal.
" 23	"	1212	R. E. Bertrand, Magog	½ lb.	15	Hudon, Hebert & Cie., Montreal.
" 24	"	1213	Coaticook Chemical Co'y., Coaticook.	½ "	15	Unknown.
" 24	"	1214	N. Lacroix, Sherbrooke	½ "	20	"
" 27	"	1215	Alex. Hébert, St. Hyacinthe.	½ "	20	"
			DISTRICT OF MONTREAL—			
Sept. 7	Cream of Tartar.	40311	W. Plante, Valleyfield, P.Q.	½ lb.	20	F. F. Dalley Co., Limited, Hamilton.
" 14	"	40312	E. Lamarche, Joliette, P.Q.	½ "	18	
" 14	"	40313	Magnan Freres, Joliette, P.Q.	½ "	20	J. V. Boudrais, Montreal
" 15	"	40314	Geo. Beausoleil, Terrebonne, P.Q.	½ "	20	Hudon, Hebert & Co., Montreal.
" 16	"	40315	John Smaill, Huntingdon, P.Q.	3 pkgs.	30	E. W. Gillett Co., Limited, Toronto.
" 17	"	40316	J. A. Lefebvre, Lachine, P.Q.	½ lb.	30	
" 17	"	40317	M. Charest, Lachine, P.Q.	½ "	30	Laporte, Martin & Cie., Ltd., Montreal.
" 17	"	40318	A. Carignan, Lachine, P.Q.	½ "	30	

SESSIONAL PAPER No. 14

CREAM OF TARTAR.

Inspector's Report (Is not an expression of opinion.)	Results of Analysis. Preliminary Examination. Starch.	Sulphates.	Phosphates.	Acidity.	Determinations. Starch.	Kind.	Alumina.	Phosphoric Acid.	Sulphuric Acid.	Calcium Oxide.	No. of Sample.	Remarks, and Opinion of the Chief Analyst.
J. C. ROULEAU, INSPECTOR.												
	p.c.	p.c.	p.c.	p.c.	p.c.		p.c.	p.c.	p.c.	p.c.	p.c.	
Pure ground Cream of Tartar.	None.	None.	None.	505	....	.....	.....	.....	.....	.....	1201	Genuine, 95 p. c. purity.
.....	"	"	"	475	.....	.....	.....	.....	.....	.....	1202	Genuine, 89 p. c. purity.
Guaranteed to be absolutely pure.	"	"	"	534	....	.....	.....	.....	.....	.....	1203	Up to B. P. standard of purity.
.....	"	"	"	495	.....	...	.....	...	.....	...	1204	Genuine, 93 p. c. purity.
.....	"	Present.	Present.	400	None.	None.	1·68	21·7	24·03	38 04	1205	Adulterated.
.....	Present.	"	"	490	4·20	Maize	1·00	9·80	5·63	15·40	1206	Adulterated.
.....	"	"	"	330	29·43	"	5·80	6·00	4 12	5·80	1207	Adulterated.
.....	None.	None.	None.	505	.....	.....	.....	.....	.....	...	1208	Genuine, 95 p. c. purity.
Guaranteed strictly pure.	"	"	"	500	.....	.....	.....	.....	.....	....	1209	Genuine, 94 p. c. purity.
Pure ground..	"	"	"	502	.....	.....	.....	.....	.....	..	1210	Genuine, 94 p. c purity.
Free from any adulteration.	Present.	Present.	Present.	482	3·27	Maize	None.	6 95	5·74	6·60	1211	Adulterated.
.....	"	"	"	340	45·24	"	0·93	13·25	0·41	16·20	1212	Adulterated.
....	"	"	"	125	42·04	"	4·62	7·50	9 61	11·80	1213	Adulterated.
.....	None.	None.	None.	480	.....	.....	.....	.....	....	...	1214	Genuine, 90 p. c. purity.
.....	"	"	"	480	....	.....	.....	....	..	.....	1215	Genuine, 90 p. c. purity.
J. J. COSTIGAN, INSPECTOR.												
.....	"	"	"	495	.....	.....	.....	.....	.....	.....	40311	Genuine, 93 p. c. purity.
.....	Present.	Present.	Present.	500	6 60	Maize	0·30	10·10	11·00	11·60	40312	Adulterated.
"Imperial" Brand:	"	"	"	510	3·80	"	0 30	8·66	8·80	11·20	40313	Adulterated.
.....	"	"	"	265	56·92	"	1 00	7·95	4·87	10·00	40314	Adulterated.
.....	None.	None.	None.	534	.....	.....	.....	.....	.....	...	40315	Up to B. P. standard of purity.
....	Present.	Present.	Present.	525	2 24	Maize	0·52	9·50	4·67	11·80	40316	Adulterated.
.....	None.	None.	None.	480	.....	.....	.....	.....	.....	.....	40317	Genuine, 90 p. c. purity.
.....	"	"	"	500	....	.....	.....	.....	.....	.....	40318	Genuine, 94 p. c. purity.

BULLETIN No. 195—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
						DISTRICT OF MONTREAL—
1909.						
Sept. 18	Cream of Tartar	40319	E. Grenier, 528 Centre st., Montreal.	½ lb.	30	Laporte, Martin & Cie., Ltd., Montreal.
" 18	" ..	40320	A. Walgensinger, 420 Charlevoix st., Montreal.	½ "	30	S. H. Ewing & Sons, Montreal.
" 21	" ..	40321	J. Poupart, Longueuil, P.Q..	½ "	30	....
" 22	" ..	40322	J. Demetelin, 144 St. Antoine st., Montreal.	3 pkgs..	15	Lister Pure Food Co., Ltd., Toronto.
" 23	" ..	40323	Duquette & Falcon, 112 Park Ave., Montreal.	½ lb....	20	J. J. Duffy & Co., Montreal.
" 23	" ..	40324	A. Dionne, 124 Sherbrooke W., Montreal.	3 pkgs..	25	S. H. Ewing & Sons, Montreal.
" 23	" ..	40325	Isidore Gougeon, 368 Dorchester W., Montreal.	½ lb....	18	....
						DISTRICT OF OTTAWA—
Sept. 22	Cream of Tartar	41283	J. C. Brown & Co., Vankleek Hill.	½ lb	15	White Swan Mills, Toronto..
" 24	" ..	41284	J. D. Laflamme, Winchester.	½ " ...	18	Birks Corner & Co., Montreal
" 24	" ..	41285	Hugh Fraser & Son, Winchester.	½ "	20	" " ..
" 25	" ..	41286	G. E. Armstrong, Perth.....	½ "	20	Unknown .. . .
" 27	" .	41287	Joseph Cousineau, Gatineau Point.	½ "	15	" .. ..
" 28	" ..	41288	J. P. Lawrence, Spencerville	½ " ...	18	F. F. Dalley Co., Ltd , Hamilton.
" 28	" ..	41289	A. Millar, Spencerville.....	½ " ..	20	T. W. Chamberlain & Co., Prescott.
" 29	" ..	41290	G. A. Huot & Son, Alexandria.	½ "	20	F. F. Dalley Co., Ltd., Hamilton.
" 29	" ..	41291	John Simpson & Son, Alexandria.	½ " . ..	18	Unknown ....
Oct. 4	" ..	41292	A. S. Russell, Galetta. ...	½ "	20	White Swan Mills, Toronto .
" 4	" ..	41293	D. B. Eastman, Kinburn....	½ "	20	" " ..
" 5	" ..	41294	J. R. Fogle, Ottawa..... ..	" "	18	F. J. Castle Co., Ottawa....
" 5	" ..	41295	Millar & Watson, Ottawa...	½ "	20	" " ...
" 5	" ..	41296	Mrs. E. Dunn, Ottawa... ..	½ "	20	H. N. Bate & Sons, Ottawa.
" 5	" ..	41297	F. A. Scott & Son, Ottawa..	½ "	20	The Lister Pure *Food* Co. Toronto.

SESSIONAL PAPER No. 14

CREAM OF TARTAR.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis. Preliminary Examination. Starch.	Sulphates.	Phosphates.	Acidity.	Determinations. Starch.	Kind.	Alumina.	Phosphoric Acid.	Sulphuric Acid.	Calcium Oxide.	No. of Sample.	Remarks, and Opinion of the Chief Analyst.
J. J. COSTIGAN, INSPECTOR—*Concluded.*												
	p. c.	p. c.	p. c.	p. c.	p. c.		p. c.	p. c.	p. c.	p. c.		
....	Present.	Present.	Present.	490	6·20	Maize	0·83	13·25	10·02	12·60	40319	Adulterated.
.....	None.	None.	None	500	.....	.....	.....	.....	.....	.....	40320	Genuine, 94 p. c. purity.
....	Present.	Present.	Present.	420	31·83	Maize	1·00	11·50	5·73	14 00	40321	Adulterated.
.....	None.	None.	None.	505	.....	.....	.....	.....	.....	.....	40322	Genuine, 95 p. c. purity.
.....	"	"	"	495	.....	.....	.....	.....	.....	.....	40323	Genuine, 93 p. c. purity.
"Prince of Wales" brand	"	"	"	495	.....	.....	.....	.....	.....	.....	40324	Genuine, 93 p. c. purity.
.....	"	"	"	495	.....	.....	.....	.....	.....	.....	40325	Genuine, 93 p. c. purity.
J. A. RICKEY, INSPECTOR.												
.....	None.	None.	None.	485	.....	.....	.....	.....	.....	.....	41283	Genuine, 91 p. c. purity.
Sample from a box marked pure.	"	"	"	484	.....	.....	.....	.....	.....	.....	41284	Genuine, 91 p. c. purity.
.....	"	"	"	484	.....	.....	.....	.....	.....	.....	41285	Genuine, 91 p. c. purity.
Sample from a tin marked, Pure Gold Cream of Tartar. Quality guaranteed.	"	"	"	510	.....	.....	.....	.....	.....	.....	41286	Genuine, 96 p. c. purity.
....	"	Present.	Present.	418	.....	.....	0·30	34·90	21·40	33·40	41287	Adulterated.
.....	"	None.	None.	486	.....	.....	.....	.....	.....	.....	41288	Genuine, 91 p. c. purity.
....	"	"	"	492	.....	.....	.....	.....	.....	.....	41289	Genuine, 92 p. c. purity.
....	"	"	"	522	.....	.....	.....	.....	.....	.....	41290	Up to B. P. standard of purity.
.....	"	"	"	486	.....	.....	.....	.....	.....	.....	41291	Genuine, 91 p. c. purity.
....	"	"	"	510	.....	.....	.....	.....	.....	.....	41292	Genuine, 96 p. c. purity.
.....	"	"	"	482	.....	.....	.....	.....	.....	.....	41293	Genuine, 91 p. c. purity.
.....	"	"	"	500	.....	.....	.....	.....	.....	.....	41294	Genuine, 94 p. c. purity.
....	"	"	"	492	.....	.....	.....	.....	.....	.....	41295	Genuine, 92 p. c. purity.
... .	"	"	"	526	.....	.....	.....	.....	.....	.....	41296	Up to B. P. standard of purity.
.....	"	"	"	498	.....	.....	.....	.....	.....	.....	41297	Genuine, 94 p. c. purity.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.
			DISTRICT OF KINGSTON—			
1909.						
Sept. 7	Cream of Tartar	42701	H. M. Stover, Kingston	½ lb.	20	A. Maclean, Kingston
" 7	"	42702	C. S. Litton, Kingston	½ "	20	H. Cochrane, Ottawa
" 7	"	42703	J. Cullen, Kingston	½ "	20	A. Maclean, Kingston
" 7	"	42704	C. Saunders, Kingston	½ "	30	E. W. Gillett Co., Ltd., Toronto.
" 7	"	42705	C. Pickering, Kingston	½ "	20	Unknown
" 7	"	42706	Anderson Bros., Kingston	½ "	30	McLaren's, Hamilton
" 7	"	42707	E. S. Suddard, Kingston	½ "	30	Greig, Toronto
" 7	"	42708	Kirk & Lee, Kingston	½ "	20	Gorman & Eckert, London, O
" 7	"	42709	Geo. Gibson, Kingston	½ "	20	F. F. Dalley Co., Ltd., Hamilton.
" 8	"	42710	J. H. P. Young, Belleville	½ "	20	Pure Gold, Toronto
" 8	"	42711	W. T. Patterson, Belleville	½ "	20	"
" 8	"	42712	T. R. Harvey, Cobourg	½ "	20	Gorman & Eckert, London, O
" 8	"	42713	S. Fourt, Port Hope	½ "	20	Red Feather
" 8	"	45714	F. Rosewear, Port Hope	½ "	20	Todhunter & Mitchell, Toronto.
" 8	"	42715	W. J. Roulty, Peterboro'	½ "	20	R. Greig, Toronto
			DISTRICT OF TORONTO—			
Sept. 11	Cream of Tartar	41347	L. Blueman, Toronto	½ lb.	20	Unknown
" 11	"	41348	P. Haberman, Toronto	½ "	20	J. Prager, Toronto
" 13	"	41349	H. Wright, Markham	½ "	20	Dalton Bros., Toronto
" 14	"	41350	J. A. Richards, Uxbridge	½ "	20	The J. M. Lowes Co., Ltd., Toronto.
" 14	"	41351	J. G. French, Beaverton	½ "	20	The F. F. Dalley Co., Ltd., Hamilton.

SESSIONAL PAPER No. 14

CREAM OF TARTAR.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.										No. of Sample.	Remarks, and Opinion of the Chief Analyst.
	Preliminary Examination.				Determinations.							
	Starch.	Sulphates.	Phosphates.	Acidity.	Starch.	Kind.	Alumnia.	Phosphoric Acid.	Sulphuric Acid.	Calcium Oxide.		
JAS. HOGAN, INSPECTOR.												
	p. c.	p. c.	p. c.	p. c.	p. c.		p. c.	p. c.	p. c.	p. c.		
....	None.	None.	None.	530	.....	.....	.....	.....	.....	.....	42701	Up to B. P. standard of purity.
.....	" .	" .	" .	510	.....	.....	.....	.....	.....	.....	42702	Genuine, 96 p. c. purity.
.....	" .	" .	" .	533	.....	.....	.....	.....	.....	.....	42703	Up to B. P. standard of purity.
.....	" .	" .	" .	530	.....	... .	.....	.....	.....	.....	42704	Up to B. P. standard of purity.
.....	" .	" .	" .	495	.....	... ..	.....	....	. ...	.....	42705	Genuine, 93 p. c. purity.
.. ..	. .	" .	" .	480	.....	.....	.....	.....	.....	.....	42706	Genuine, 90 p. c. purity.
In original carton.	Present.	Present.	" .	455	3·16	Maize	1·20	None.	5·36	None.	42707	Adulterated.
.....	None.	None.	" .	500	... .	.....	.....	.....	.....	.....	42708	Genuine, 94 p. c. purity.
.....	" .	" .	" .	490	.....	.....	.....	.....	.....	.....	42709	Genuine, 92 p. c. purity.
....	" .	" .	" .	505	.....	.. ..	.....	....	.....	.....	42710	Genuine, 94 p, c. purity.
.....	" .	" .	" .	510	.....	.....	. . .	.....	.....	.....	42711	Genuine, 96 p. c. purity.
....	" .	" .	" .	500	.....	.....	.....	.....	.....	.....	42712	Genuine, 94 p. c. purity.
....	" .	" .	" .	495	.....	.....	.....	.....	.....	.....	42713	Genuine, 93 p. c. purity.
..... .	" 5	" .	" .	520	.....	...	.....	....	.....	.....	42714	Up to B. P. standard of purity.
. .....	" .	" .	. "	495	.....	.....	.....	....	.....	.....	42715	Genuine, 93 p. c. purity.
H. J. DAGER, INSPECTOR.												
Sold as Cream of Tartar.	Present.	Present.	None.	460	5·08	Maize	1·30	None.	5·93	6·00	41347	Adulterated.
Sample from tin labelled Pure Ground Cream of Tartar. Sold as Cream of Tartar.	" .	None.	" .	520	8·10	" .	.....	.....	.....	.....	41348	Adulterated.
"Bison" brand	None.	"	. .	505	.....	.....	... .	.....	.....	.....	41349	Genuine, 94 p. c. purity.
.....	Present.	Present.	Present.	460	11·50	Maize	2 18	3·62	9·68	5·60	41350	Adulterated.
Sample from tin labelled Pure Cream of Tartar.	None.	None.	None.	500	.....	.....	.....	.....	.....	.....	41351	Genuine, 94 p. c. purity.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF TORONTO—			
1909.						
" 15	Cream of Tartar.	41352	J. B. Johnston, Orillia	½ lb	20	F. W. Humphrey, Toronto.
" 16	"	41353	Geo. Baker, Midland	½ "	15	E. W. Gillett Co., Ltd., Toronto.
" 16	"	41354	J. McConkey, Penetang	½ "	20	Unknown
" 17	"	41355	J. E. Enems, Barrie	½ "	20	Jno. Sloan & Co., Toronto.
" 24	"	41356	R. Clark, Dundas	½ "	20	Young Winfield, Ltd., Hamilton.
" 24	"	41357	W. Durance, Hamilton	½ "	20	Norman & Co., Hamilton.
" 24	"	41358	Wm. Macartie, Hamilton	½ "	20	Unknown
" 23	"	41359	Hall & Co., Hamilton	½ "	15	"
" 27	"	41360	Joseph Brown, Toronto	½ "	20	Dalton Bros., Toronto.
" 27	"	41361	A. Grattan, Toronto	½ "	20	The Davidson & Hay, Ltd., Toronto.
			DISTRICT OF LONDON—			
Sept. 14	Cream of Tartar.	30819	A. Beattie, St. Mary's	½ lb	20	Lyman Sons & Co., Montreal
" 14	" "	30821	G. McLean, St. Mary's	½ "	20	A. M. Smith & Co., London, Ont.
" 14	" "	30822	McCulley & Haugh, Stratford	¼ "	30	F. F. Dalley & Co. Ltd., Hamilton.
" 15	" "	30827	Barnsdale Trading Co.	3 pkgs	30	Canada Grocery Co., London, Ont.
" 15	" "	30829	A. G. Lloyd, Stratford	½ lb	30	Gorman & Eckert, London, Ont.
" 15	" "	30832	M. Durkin, Mitchell	½ "	30	E. W. Gillett Co., Ltd., Toronto.

SESSIONAL PAPER No. 14

CREAM OF TARTAR.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.										No. of Sample.	Remarks and Opinions of the Chief Analyst.
	Preliminary Examination.				Determinations.							
	Starch.	Sulphates.	Phosphates.	Acidity.	Starch.	Kind.	Alumnia.	Phosphoric Acid.	Sulphuric Acid.	Calcium Oxide.		
H. J. DAGER, TORONTO—*Concluded.*												
	p. c.	p. c.	p. c.	p. c.		p. c.	p. c.	p. c.	p. c.			
Sample from tin labelled Cream of Tartar.	None.	Present.	None.	455	None.	None.	None.	None.	6·40	6·60	42352	Genuine, 86 p. c. purity.
Sample from paper bag labelled absolutely pure.	"	None.	"	515	.....	.....	.....	.....	.....	.....	41353	Up to B. P. standard of purity.
.....	"	"	"	505	.....	.....	.....	.....	.....	.....	41354	Genuine, 94 p. c. purity.
Sample from tin labelled Cream of Tartar.	"	"	"	490	.....	.....	.....	.....	.....	.....	41355	Genuine, 92 p. c. purity.
.....	"	"	"	486	.....	.....	.....	.....	.....	.....	41356	Genuine, 91 p. c. purity.
.....	"	"	"	488	.....	.....	.....	.....	.....	.....	41357	Genuine, 92 p. c. purity.
Sample sold as Cream of Tartar.	"	"	"	482	.....	.....	.....	.....	.....	.....	41358	Genuine, 90 p. c. purity.
Sample labelled Cream of Tartar and sold as Cream of Tartar.	"	"	"	484	.....	.....	.....	.....	.....	.....	41359	Genuine, 91 p. c. purity.
Sample from original 1 lb. tin labelled Cream of Tartar and sold as Cream of Tartar.	"	"	"	496	.....	.....	.....	.....	.....	.....	41360	Genuine, 93 p. c. purity.
"Falcon" brand. Sold as Cream of Tartar.	Present.	Present.	Trace.	482	15·50	Maize	2·20	Trace.	9·26	2·00	41361	Adulterated.
T. KIDD, INSPECTOR.												
.....	None.	None.	None.	490	.....	.....	.....	.....	.....	.....	30819	Genuine, 92 p. c. purity.
.....	"	"	"	534	.....	.....	.....	.....	.....	.....	30821	Up to B. P. standard of purity.
.....	"	"	"	500	.....	.....	.....	.....	.....	.....	30822	Genuine, 94 p. c. purity.
.....	"	"	"	500	.....	.....	.....	.....	.....	.....	30827	Genuine, 94 p. c. purity.
.....	"	"	"	505	.....	.....	.....	.....	.....	.....	30829	Genuine, 94 p. c. purity.
.....	"	"	"	534	.....	.....	.....	.....	.....	.....	30832	Up to B. P. standard of purity.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF LONDON—			
1909						
Sept. 15	Cream of Tartar	30834	N. E. Coppin, Mitchell	½ lb.	20	Lumsden Bros., Hamilton
" 15	" "	30836	T. F. Mulineux, Dublin	¾ "	30	E. W. Gillett Co., Ltd., Toronto
" 16	" "	30838	T. S. Blewis, Seaforth	3 pkgs.	25	F. F. Dalley & Co., Ltd., Hamilton.
" 16	" "	30839	W. R. Smith, Seaforth	3 "	30	E. W. Gillett Co., Ltd., Toronto.
" 20	" "	30841	Benson Bros., Guelph	¾ lb	30	Belford, Hamilton
" 21	" "	30848	P. T. Dean, Goderich	½ "	20	Gorman & Eckert, London, Ont.
" 21	" "	30852	J. J. McEwin, Goderich	¾ "	30	E. W. Gillett Co., Ltd., Toronto.
" 22	" "	30854	J. A. Anderson & Son, Blythe	½ "	20	Gorman & Eckert, London, Ont.
" 22	" "	30857	A. J. Malcolm, Wingham	¾ "	30	" " "
" 22	" "	30858	J. Henry Christie, Wingham	½ "	20	Todhunter & Mitchell, Toronto.
			DISTRICT OF WINDSOR—			
Oct. 4	Cream of Tartar.	42601	Bradley & Son, Chatham	9 oz.	20	Unknown
" 4	" "	42604	Jas. Paul, Chatham	½ lb.	18	G. M. Smith & Co., London, Ont.
" 5	" "	42611	J. H. Luxford, Walkerville	½ "	20	Unknown
" 5	" "	42615	Clarke & Bake, Walkerville	½ "	20	Unknown
" 5	" "	42619	J. Foster, Walkerville	½ "	20	
" 5	" "	42621	Plante Bros., Walkerville	3 pkgs.	15	McLaren's, Hamilton
" 6	" "	42624	J. E. Terry, Windsor	½ lb.	18	T. Smyth, Windsor
" 6	" "	42625	J. W. McKinney, Windsor	3 pkgs.	25	London Canning & Evaporating Co.
" 6	" "	42626	C. L. Billing, Essex	½ lb.	10	Unknown
" 6	" "	42627	A. H. Scarff, Essex	pkgs.	30	Canada Spice and Grocery Co., London, Ont.
" 6	" "	42632	Chas. A. Jeffery, Kingsville	½ lb.	20	Unknown

SESSIONAL PAPER No. 14

CREAM OF TARTAR.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.										No. of Sample.	Remarks and Opinion of the Chief Analyst.
	Preliminary Examination.				Determinations.							
	Starch.	Sulphates.	Phosphates.	Acidity.	Starch.	Kind.	Alumina.	Phosphoric Acid.	Sulphuric Acid.	Calcium Oxide.		
T. KIDD, INSPECTOR—*Concluded.*												
	p. c.	p. c.	p. c.	p. c.	p. c.		p. c.	p. c.	p. c.	p. c.		
.....	None.	None.	None.	495	.....	.....	.....	.....	.....	.....	30834	Genuine, 93 p. c. purity.
.....	"	"	"	534	.....	.....	.....	.....	.....	.....	30836	Up to B. P. standard of purity.
.....	"	"	"	500	.....	.....	.....	.....	.....	.....	30838	Genuine, 94 p. c. purity.
.....	"	"	"	534	.....	.....	.....	.....	.....	.....	30839	Up to B. P. standard of purity.
.....	"	"	"	534	.....	.....	.....	.....	.....	.....	30841	Up to B. P. standard of purity.
.....	"	"	"	505	.....	.....	.....	.....	.....	.....	30848	Genuine, 94 p. c. purity.
.....	"	"	"	534	.....	.....	.....	.....	.....	.....	30852	Up to B. P. standard of purity.
.....	"	"	"	495	.....	.....	.....	.....	.....	.....	30854	Genuine, 93 p. c. purity.
.....	"	"	"	500	.....	.....	.....	.....	.....	.....	30857	Genuine, 94 p. c. purity.
.....	"	"	"	520	.....	.....	.....	.....	.....	.....	30858	Up to B. P. standard of purity.
JNO. TALBOT, INSPECTOR.												
.....	None.	None.	None.	480	.....	.....	.....	.....	.....	.....	42601	Genuine, 90 p. c. purity.
.....	"	"	"	504	.....	.....	.....	.....	.....	.....	42604	Genuine, 94 p. c. purity.
.....	"	"	"	490	.....	.....	.....	.....	.....	.....	42611	Genuine, 92 p. c. purity.
.....	Present.	Present.	Present.	502	13·10	Maize	2·40	1·15	10·60	2·20	42615	Adulterated.
.....	"	"	"	354	16·20	"	2·30	2·90	6·66	3·00	42619	Adulterated.
McLaren's 'Invincible.'	None.	None.	None.	490	.....	.....	.....	.....	.....	.....	42621	Genuine, 92 p. c. purity.
.....	"	"	"	488	.....	.....	.....	.....	.....	.....	42624	Genuine, 92 p. c. purity.
'Sweetheart' Brand.	"	"	"	498	.....	.....	.....	.....	.....	1·00	42625	Genuine, 94 p. c. purity.
.....	"	"	"	486	.....	.....	.....	.....	.....	.....	42626	Genuine, 91 p. c. purity.
'Crest' Brand, guaranteed absolutely pure.	"	"	"	498	.....	.....	.....	.....	.....	.....	42627	Genuine, 94 p. c. purity.
Vendor said he would not be positive whether it was Gillett's or McLaren's.	"	"	"	490	.....	.....	.....	.....	.....	.....	42632	Genuine, 92 p. c. purity.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
						DISTRICT OF WINDSOR—
1909.						
Sept. 7	Cream of Tartar	42637	Geo. McIntyre, Leamington	3 pkgs..	30	Gorman, Eckert & Co., London, Ont.
" 7	" " ..	42638	J. E. Davies, Leamington...	3 " ..	30	E. W. Gillett Co., Ltd., Toronto.
" 8	" " ..	42642	J. Caron, Ridgetown.. .	½ lb....	20	Unknown.....
" 8	" " ..	42643	Orendorf Bros.....	3 pkgs..	30	Gorman, Eckert & Co., London, Ont.
						DISTRICT OF MANITOBA—
Sept. 15	Cream of Tartar	39771	A. Nitikman, Winkler	½ lb....	25	Gold Standard Mfg. Co., Winnipeg.
" 15	" " ..	39772	Rosner & Brownstone, Plum Coulee.	½ "	20	The Gold Standard Mfg. Co., The Codville Co., Winnipeg.
" 15	" " ..	39773	D. C. Peters, Plum Coulee..	½ "	20	E. W. Gillett Co., Ltd., Toronto.
" 16	" " ..	39774	H. Hilton, Cypress River....	½ "	25	" "
" 17	" " ..	39775	Higgins & Webster, Roland .	½ " . ..	25	White Swan Spice & Cereals Co., Ltd., Toronto.
" 21	" " ..	39776	Alex. Reid, Brandon.....	½ "	20	White Swan, Toronto.....
" 21	" " ..	39777	A. M. Percival, Brandon....	½ "	20	Gold Standard Mfg. Co., Winnipeg.
" 21	" " ..	39778	Smith & Burton, Brandon...	½ "	20	Vendors .....
" 22	" " ..	39779	D. Rice, Brandon....	½ " ...	20	The Codville Co., Brandon.
" 22	" " ..	39780	Murray & Beattie, Rapid City.	½ " ...	20	Unknown ....
" 22	" " ..	39781	Lepage Bros., Rapid City....	½ "	20	The Blue Ribbon, Ltd., Winnipeg.
" 23	" " ..	39782	D. G. McDonald, Portage Le Prairie.	½ "	25	The Jobin Marrin Co., Winnipeg.
" 23	" " ..	39783	Burley's, Portage le Prairie..	½ "	20	Gold Standard Mfg. Co., Winnipeg.
" 23	" " ..	39784	T. A. Newman & Bro., Portage le Prairie.	½ "	20	Todhunter & Mitchell, Winnipeg.
" 24	" " ..	39785	J. Paterson, Winnipeg.	½ "	20	Unknown ....

SESSIONAL PAPER No. 14

CREAM OF TARTAR.

Inspector's Report. (Is not an expression of opinion.	Results of Analysis. Preliminary Examination. Starch.	Sulphates.	Phosphates.	Acidity.	Determinations. Starch.	Kind.	Alumina.	Phosphoric Acid.	Sulphuric Acid.	Calcium Oxide	No. of Sample.	Remarks, and Opinion of the Chief Analyst.
JNO. TALBOT, INSPECTOR—*Concluded.*												
	p. c.	p. c.	p. c.	p. c.	p. c.		p. c.	p. c,	p. c.	p. c.		
Labelled Gorman's Pure Ground Cr. of Tartar.	None.	None.	None.	458	.....	.....	.....	.....	.....	2·80	42637	Genuine, 86 p. c. purity.
Labelled Gillett's Ground Cream of Tartar, guaranteed to be absolutely pure.	" .	" .	" .	524	.....	.....	.....	.....	.....	.....	42638	Up to B. P. standard of purity.
....	Present.	Present.	Present.	430	5·92	Maize	2·10	4·35	6·15	4 20	42642	Adulterated.
Gorman's Pure Ground Cr. of Tartar, guaranteed.	None.	None.	None.	500	.... .	.....	.....	.....	.....	.....	42643	Genuine, 94 p. c. purity.
A. C. LARIVIERE, INSPECTOR.												
'Gold Standard.'	None.	None.	None.	525	.....	.....	.....	.....	.....	....	39771	Up to B. P. standard of purity.
....	" .	" .	" .	520	.....	.....	.....	.....	.....	.....	39772	Up to B. P. standard of purity.
....	" .	" .	" "	534	.....	.....	.....	.....	.....	.....	39773	Up to B. P. standard of purity.
.....	" .	" .	" .	534	.....	.....	.....	.....	.....	.....	39774	Up to B. P. standard of purity.
'White Swan'	" .	" .	" .	505	.....	.....	.....	.....	.....	.....	39775	Genuine, 94 p. c. purity.
....	" .	" .	" .	510	.....	.....	.....	.....	.....	.....	39776	Genuine, 96 p. c. purity.
Gold Standard	" .	" .	" .	485	.....	.....	.....	.....	.....	.....	39777	Genuine, 91 p. c. purity.
....	" .	" .	" .	505	.....	.....	.....	.....	.....	.....	39778	Genuine, 94 p. c. purity.
....	" .	" .	" .	534	.....	.....	.....	.....	.....	.....	39779	Up to B. P. standard of purity.
.. ..	" .	" .	" .	.. .	.....	.....	.....	.....	.....	.....	39780	Is pulverized sugar
..... .	" .	" .	"	490	.....	..	.....	...	. .	.. .	39781	Genuine, 92 p. c. purity.
.....	" .	" .	" .	534	..	.....	...	.....	....	.....	39782	Up to B. P. standard of purity.
....	" .	" .	" .	505	....	.....	...	...	.....	.....	39783	Genuine, 94 p. c. purity.
.....	" .	" .	" .	520	.....	.....	.....	.....	.....	.....	39784	Up to B. P. standard of purity.
... .	" .	" .	" .	490	.....	...	...	.....	.....	.....	39785	Genuine, 92 p. c. purity.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF CALGARY—			
1909.						
Sept. 10	Cream of Tartar.	35483	Hudson Bay Co., Lethbridge.	3 pkgs.	30	Hudson Bay Co., Winnipeg.
" 10	" "	35484	The Bentley Co., Lethbridge.	3 "	30	E. W. Gillett Co., Ltd., Toronto.
10	" "	35485	Bradbur & Co., Lethbridge.	½ lb.	25	Gold Standard Co., Ltd., Winnipeg.
" 11	" "	35486	Spencer & Todd, Medicine Hat.	3 pkgs.	30	Balfour & Co., Hamilton
" 11	" "	35487	H. W. Ireland & Co., Medicine Hat.	3 "	30	McLaren's, Ltd., Hamilton.
" 11	" "	35489	R. Dunn, Medicine Hat.	3 "	30	Dyson Co., Winnipeg.
Oct. 7	" "	35490	Acme Co., Edmonton.	3 "	45	Pure Gold Mfg. Co., Toronto
" 7	" "	35491	Gariepy & Lessard, Edmonton.	½ lb.	30	Unknown.
" 7	" "	35492	Hallier & Aldridge, Edmonton.	½ "	20	Blue Ribbon, Ltd., Winnipeg
" 7	" "	35493	J. H. Morris & Co., Edmonton.	3 pkgs.	30	E. W. Gillett Co., Ltd., Toronto.
" 7	" "	35494	Capital Mer. Co., Edmonton.	3 "	30	" "
" 7	" "	35495	J. H. Stoddart, Edmonton.	½ lb.	20	" "
" 7	" "	35496	C. Hall, Edmonton.	3 pkgs.	30	" "
" 7	" "	35497	City Grocery Co., Edmonton.	3 "	30	" "
" 7	" "	35498	Hudson Bay Co., Edmonton.	3 "	30	White Star Mfg. Co., Winnipeg.
			DISTRICT OF VANCOUVER—			
Sept. 10	Cream of Tartar.	37718	W. Clark, Vancouver.	½ lb.	25	Pure Gold Mfg. Co., Toronto
" 10	" "	37719	Woodward Dept. Stores, Vancouver.	½ "	25	E. W. Gillett Co., Ltd., Toronto.
" 10	" "	37720	Geo. Wagg, Vancouver.	2 pkgs.	25	Wm. Braid & Co., Vancouver
10	" "	37721	J. R. Gosling, Vancouver.	½ lb.	25	E. W. Gillett Co., Ltd., Toronto.
10	"	37722	J. A. Hawkes, Vancouver.	2 pkgs.	25	Mayell & Co., Toronto

SESSIONAL PAPER No. 14

CREAM OF TARTAR.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.										No. of Samples.	Remarks and Opinion of the Chief Analyst.
	Preliminary Examination.				Determinations.							
	Starch.	Sulphates.	Phosphates.	Acidity.	Starch.	Kind.	Alumnia.	Phosphoric Acid.	Sulphuric Acid.	Calcium Oxide.		
R. W. FLETCHER, INSPECTOR.												
	p. c.	p. c.	p. c.	p. c.	p. c.		p. c.	p. c.	p. c.	p. c.		
	None.	None.	None.	485							35483	Genuine, 91 p. c. purity.
	"	"	"	534							35484	Up to B. P. standard of purity.
	"	"	"	534							35485	Up to B. P. standard of purity.
	"	"	"	495							35486	Genuine, 93 p. c. purity.
	"	"	"	455							35487	Genuine, 86 p. c. purity.
	"	"	"	490							35489	Genuine, 92 p. c. purity.
	"	"	"	502							35490	Genuine, 94 p. c. purity.
	"	"	"	474						2·20	35491	Genuine, 89 p. c. purity.
	"	"	"	474						2·20	35492	Genuine, 89 p. c. purity.
	"	"	"	526							35493	Up to B. P. standard of purity.
	"	"	"	526							35494	Up to B. P. standard of purity.
	"	"	"	526							35495	Up to B. P. standard of purity.
	"	"	"	526							35496	Up to B. P. standard of purity.
	"	"	"	526							35497	Up to B. P. standard of purity.
	"	"	"	470						2·00	35498	Genuine, 88 p. c. purity.
J. F. POWER, INSPECTOR.												
Quality guaranteed.	None.	None.	None.	490							37718	Genuine, 92 p. c. purity.
Guaranteed absolutely pure	"	"	"	524							37719	Up to B. P. standard of purity.
Guaranteed pure.	"	"	"	474						2·20	37720	Genuine, 89 p. c. purity.
Pure	"	"	"	524							37721	Up to B. P. standard of purity.
"Art" brand absolutely pure	"	"	"	482							37722	Genuine, 91 p. c. purity.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF VANCOUVER—			
1909.						
Sept. 11	Cream of Tartar	37723	Duke's Grocery, Vancouver..	½ lb....	25	Empress Mfg. Co., Vancouver
" 13	" " ..	37724	Kelly, Douglas & Co, Vancouver.	½ "	30	Vendors.. .. . .
" 13	" " ..	37725	W. J. McMillan & Co., Vancouver.	½ "	25	Unknown..... ....
" 16	" " ..	37746	Walford & Rooney, Vancouver.	1 "	30	" ....
" 16	" " ..	37747	Kyles Grocery, Vancouver...	3 pkgs..	30	W. H. Wilson, Vancouver...
" 16	" " ..	37748	Mrs. Scott, Vancouver.....	½ lb. ..	20	Braid & Co., Vancouver.....
" 16	" " ..	37749	Webster Bros., Vancouver...	½ "	30	Lockerby Bros., Montreal...
" 16	" " ..	37750	London Grocery, Vancouver.	½ "	30	Unknown..... . ... .
" 20	" " ..	37751	H. Albert, Vancouver.....	½ "	25	" ....
" 20	" " ..	37752	H. D. Thompson, Vancouver.	½ " .. .	25	Braid & Co., Vancouver... .
			DISTRICT OF VICTORIA—			
Oct. 14	Cream of Tartar.	41534	Windsor Grocery Co., Victoria, B.C.	½ lb....	25	Pioneer Coffee & Spice Mills Ltd., Victoria, B.C.
" 15	" " ..	41535	The West End Grocery Co., Ltd., Victoria, B.C.	½ "	25	E. W. Gillett Co., Ltd., Toronto.
" 15	" " ..	41536	Copas & Young, Victoria, B.C.	½ " ...	20	" " .
" 15	" " ..	41537	J. W. Speed, Victoria, B.C..	½ "	25	Simon Leiser & Co., Victoria B.C.
" 15	" " ..	41538	Saunders Grocery Co., Ltd., Victoria, B.C.	3 pkgs..	30	E. W. Gillett Co., Ltd., Toronto.
" 15	" " ..	41539	Wm. B. Hall, Victoria, B.C.	½ lb....	20	Victoria Coffee & Spice Mills Victoria, B.C.
" 15	" " ..	41540	Dixie H. Ross & Co., Victoria, B.C.	½ "	25	E. W. Gillett Co., Ltd., Toronto.
" 16	" " ..	41541	A. Pool, Victoria, B.C.....	½ "	20	Empress Mfg. Co., Vancouver, B.C.
" 16	" " ..	41542	Harrison & McDonald, Victoria, B.C.	3 pkgs..	30	A. Shilling & Co., San Francisco, Cal.

SESSIONAL PAPER No. 14

CREAM OF TARTAR.

Inspector's Report. (Is not an expression of opinion.	Results of Analysis. Preliminary Examination. Starch.	Sulphates.	Phosphates.	Acidity.	Determinations. Starch.	Kind.	Alumnia.	Phosphoric Acid.	Sulphuric Acid.	Calcium Oxide.	No. of Samples.	Remarks and Opinions of the Chief Analyst.
J. F. POWER, INSPECTOR—*Concluded.*												
	p. c.	p. c.	p. c.	p. c.	p. c.		p. c.	p. c.	p. c.	p. c.		
.....	Pres't	None.	None.	482	3·69	Maize		.....	.....	.....	37723	Adulteration apparently accidental.
Guaranteed absolutely pure	None.	"	"	524	.....	.....	.....	.....	.....	.....	37724	Up to B. P. standard of purity.
.....	"	"	"	478	.....	.....	.....	.....	.....	1·80	37725	Genuine, 89 p. c. purity.
.....	"	"	"	524	.....	.....	.....	.....	.....	.....	37746	Up to B. F. standard of purity.
.....	"	"	"	490	.....	.....	.....	.....	.....	.....	37747	Genuine, 92 p. c. purity.
Guaranteed absolutely pure	"	"	"	500	.....	.....	.....	.....	.....	1·00	37748	Genuine, 94 p. c. purity.
Pure	"	"	"	484	.....	.....	.....	.....	.....	.....	37749	Genuine, 91 p. c. purity.
"Hyginic" brand. Guaranteed absolutely pure.	"	"	"	474	.....	.....	.....	.....	.....	2·20	37750	Genuine, 89 p. c. purity.
.....	"	"	"	486	.....	.....	.....	.....	.....	.....	37751	Genuine, 91 p. c. purity.
.....	"	"	"	500	.....	.....	.....	.....	.....	0·80	37752	Genuine, 94 p. purity.
D. O'SULLIVAN, INSPECTOR.												
"Hygenic" brand. Guaranteed absolutely pure.	None.	None.	None.	464	.....	.....	.....	.....	.....	.....	41534	Genuine, 88 p. c. purity.
Guaranteed absolutely pure	"	"	"	524	.....	.....	.....	.....	.....	.....	41535	Up to B. P. standard of purity.
.....	"	"	"	526	.....	.....	.....	.....	.....	.....	41536	Up to B. P. standard of purity.
.....	"	"	"	524	.....	.....	.....	.....	.....	.....	41537	Up to B. P. standard of purity.
.....	"	"	"	526	.....	.....	.....	.....	.....	.....	41538	Up to B. P. standard of purity.
.....	"	"	"	476	.....	.....	.....	.....	.....	1·80	41539	Genuine, 89 p. c. purity.
.....	"	"	"	522	.....	.....	.....	.....	.....	.....	41540	Up to B. P. standard of purity.
Labelled pure cream of tartar.	"	"	"	494	.....	.....	.....	.....	.....	.....	41541	Genuine, 93 p. c. purity.
"Shilling's Best" cream of tartar.	"	"	"	522	.....	.....	.....	.....	.....	.....	41542	Up to B. P. standard of purity.

BULLETIN No. 195—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF VICTORIA—			
1909.						
Sept. 16	Cream of Tartar	41543	Acton Bros., Victoria B.C...	½ lb....	20	E. W. Gillett Co., Ltd., Toronto.
" 16	" " ..	41544	W. A. Jameson, Victoria, B.C.	½ "	15	R. Pichot & Co., Seattle, Wash,
" 18	" " ..	41545	L. Dickinson, Victoria, B.C.	3 pkgs..	30	E. R. Durkee & Co., New York, U.S.A.
" 18	" " ..	41546	J. Renouf, Victoria, B.C....	½ lb....	25	E. W. Gillett Co., Ltd., Toronto.
" 18	" " .	41547	F.E.Plummer, Victoria, B.C.	½ "	20	Simon Leiser & Co., Victoria, B.C.
" 18	" " ..	41548	Erskine & Co., Victoria, B.C.	½ "	20	J. H. Todd & Son, Victoria, B.C.

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CREAM OF TARTAR.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.										No. of Sample.	Remarks, and Opinion of the Chief Analyst.
	Preliminary Examination.				Determinations.							
	Starch.	Sulphates.	Phosphates.	Acidity.	Starch.	Kind.	Alumina.	Phosphoric Acid.	Sulphuric Acid.	Calcium Oxide.		
D. O'SULLIVAN, INSPECTOR—*Concluded.*												
	p. c.	p. c.	p. c.	p. c.	p. c.		p. c.	p. c.	p. c.	p. c.		
Labelled pure cream of tartar.	None.	None.	None.	524	....	.....	...	.....	...	....	41543	Up to B. P. standard of purity.
....	"	"	"	520	.....	.....	.....	....	....	.....	41544	Up to B. P. standard of purity
"Gauntlet" brand.	"	"	"	524	.....	.....	.....	....	.....	....	41545	Up to B. P. standard of purity.
Guaranteed pure.	"	"	"	522	.....	....	.....	.....	....	.....	41546	Up to B. P. standard of purity.
.. ..	"	"	"	520	.....	.....	....	...	..	.....	41547	Up to B. P. standard of purity.
.....	"	"	"	520	... ..	..	.....	.....	.....	..	41548	Up to B. P. standard of purity.

APPENDIX Q.

BULLETIN No. 196—ALE AND LAGER BEER.

Ottawa, January 5, 1910.

W. J. Gerald, Esq.,
Deputy Minister of Inland Revenue.

Sir,—I beg to hand you herewith the results of analysis of 140 samples sold as Ale (Beer) and Lager Beer, throughout Canada, in July and August of 1909. These may be classified as follows:—

Ale	73	samples.
Lager Beer	67	"
	140	

Of the samples sold as Ale or Beer, two samples, viz.: Nos. 39503 and 36774 contain such small amounts of alcohol, as to exclude them from recognition as Ale; they properly belong to the class of non-alcoholic beverages. Two other samples, viz.: 39504 and 39505, sold as Root-beer and Ginger Beer, respectively, yet contain alcohol equivalent to more than four per cent of proof spirit, and on this account should be regarded as alcoholic beverages, although they are not Malt Liquors.

Our last systematic examination of Malt Liquors was made in 1897, and is reported in Bulletin No. 52. The specific gravity of original worts has been determined by the method authorized for Excise purposes (C. 249), and direct comparison may therefore be instituted between the present report, and that printed as Bulletin 52.

We have no legalized definitions for the articles known as Ale (Beer) and Lager Beer. The report now furnished, together with that of 1897, contains data which will be useful in formulating standards for Malt Liquors; and I would respectfully recommend its publication as Bulletin No. 196.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

Date of Collection.	Nature of Sample	No. of Sample.	Name and Address of Vendor.	Cost. Quantity	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
				DISTRICT OF NOVA SCOTIA—			
1909.							
Aug. 16	Beer or Ale.	41726	A. Keith & Son, Halifax, N.S.	3 qts.	....	Vendors	Pale Ale
" 16	"	41727	Halifax Breweries, Ltd., Halifax, N.S.	3 "	....	Vendors	Howard's Ale
" 16	"	41728	Oland & Son, Halifax, N.S.	3 "	....	Vendors	Pale Ale
" 16	"	41729	Crystal Spring Mineral Waters Co., Halifax N.S.	3 "	....	Vendors	Ramey's Pilsener Beer.
" 16	"	41730	Kelley & Glassey, Halifax, N.S.	3 "	75	McEwan & Co., Edinborough, Scotland.	India Pale Ale
				DISTRICT OF PRINCE EDWARD ISLAND—			
July 19	Beer or Ale.	38541	J. & F. Morris, Charlottetown.	3 qts.	60	John Labatt, London, Ont.	
" 19	"	38442	Halifax Brewing Co., Charlottetown.	3 "	75	Halifax Brewing Co., Halifax, N.S.	
" 19	"	38543	McDonald & McKinnon, Charlottetown	3 "	75	John Labatt, London, Ont.	
" 19	"	38544	A. W. Reddin, Charlottetown.	3 "	75	James Ready, Fairville, N.S.	
" 19	"	38545	Byrne Bros., Charlottetown.	3 "	90	Bass & Co., London, Eng.	
				DISTRICT OF NEW BRUNSWICK—			
July 19	Beer or Ale.	39501	Simeon Jones, Ltd., St. Johns, N.B.	3 qts.	50	Vendors	"Red Ball" India Pale Ale.
" 21	"	39502	James Ready, Ltd., St. Johns, N.B.	3 "	50	Vendors	Ready's Pale Ale
" 19	Ginger Beer	39503	Dolan Bros, St. Johns, N.B.	3 bots.	60	Vendors	Labelled Stone Ginger Beer.
" 20	Root Beer.	39504	W. B. Daley, St. Johns, N.B.	3 "	15	Vendors	Labelled Root Beer.
Aug. 6	Ginger Beer	39505	S. H. McKee & Sons, Fredericton, N.B.	3 "	30	Vendors	Labelled Stone Ginger Beer.
				DISTRICT OF QUEBEC—			
July 15	Beer or Ale.	36772	E. A. Delisle, 29 Cote St. Geniéve.	3 bots.	35	G. E. Amiot, Quebec	
" 15	"	36773	V. Lacasse, Rue St. Clair.	3 "	35	Proteau & Carignan, Quebec.	
" 15	"	36774	Jule Rochette, 7 Rue Deligny.	3 "	35	T. B. Reneaud & Co., Quebec.	
" 15	"	36775	Jule Rochette, 7 Rue Deligny.	3 "	35	Boswell, Quebec	
" 15	"	36776	Jule Rochette, 7 Rue Deligny.	3 .	35	G. E. Amiot, Quebec	

ALE (BEER).

Results of Analysis.																
Sp. Gr. at 15·5°	Sp. Gr. of Distillate at 15·5°.	Sp. Gr. of Dealcoholized residue.	Alcohol. By Weight.	Alcohol. By Volume.	Alcohol. As proof spirit.	Sp. Gr. of Original Worts.	Malt used, lbs. per Gallon.	Total Solids in Beer (determined).	Residual Solids (from tables).	Solids in Original Worts.	Degree of Fermentation.	Preservatives.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
			p. c.	p. c.	p. c.			p. c.	p. c.	p. c.				
R. J. WAUGH, INSPECTOR.														
1·0065	0·9908	1·0153	5·37	6·71	11·76	1·0555	2·50	3·76	3·81	13·90	72·6	.....	41726	
1·0067	0·9817	1·0161	6·07	7·57	13·27	1·0617	2·78	3·83	4·01	15·47	74·1	.....	41727	
1·0088	0.9914	1·0164	5·00	6·24	10·94	1·0534	2·40	3·94	4·09	13·37	69·4	.....	41728	
1·0014	0·9951	1·0058	2·78	3·49	6·10	1·0249	1·12	1·34	1·44	6·21	76·8	.....	41729	
1·0047	0·9896	1·0146	6·10	7·61	13·34	1·0604	2·72	3·59	3·65	15·15	75·9	.....	41730	
THEO. MOORE, INSPECTOR.														
1·0141	0·9952	1·0184	2·72	3·42	5·98	1·0370	1·67	4·43	4·59	9·25	50·3	.....	38541	
1·0141	0·9904	1·0134	5·62	7·01	12·30	1·0556	2·50	3·28	3·34	13.93	76·0	.....	38542	
1·0103	0.9926	1·0187	4·25	5·32	9·31	1·0494	2·22	4·24	4.58	12·36	62·9	.....	38543	
1·0071	0·9899	1·0168	6·00	7·48	13·11	1·0615	2·77	4·12	4·19	15·42	72·1	.....	38544	
1·0037	0·9895	1·0192	6·21	7·74	13·57	1·0657	2·96	4·51	4·79	16·48	70·9	.....	38545	
J. C. FERGUSON, INSPECTOR.														
1·0070	0·9917	1·0152	4·81	6·02	10·54	1·0506	2·28	3·58	3·79	12·67	62·1	Salicylic acid.	39501	
1·0051	0·9899	1·0151	5·94	7·40	12·97	1·0598	2·69	3·47	3·76	14·99	74·9	Sulphites	39502	
1·0287	0·9980	1·0307	1·06	1·34	2·34	.....	.....	7·20	.. .	.....	...	.....	39503	Is not Beer.
0·9977	0·9962	1·0017	2·17	2·72	4·76	.....	.....	.....	.....	.....	.....	.....	39504	
1·0107	0·9959	1·0151	2·33	2·93	5·13	... ..	....	2·99	... .	.....	....	.....	39505	
E. BELAND, INSPECTOR.														
1·0094	0·9927	1·0169	4·19	5·24	9·18	1·0471	2·20	4·02	4·21	11·79	64·3	.....	36772	
1·0122	0·9926	1·0196	4·25	5·32	9·31	1·0503	2·26	4·50	4·89	12·59	61·1	Salicylic acid.	36773	
1·0003	0·9976	1·0024	1·31	1·65	2·89	1·0106	0·48	0·48	0 60	2·64	2·2	.....	36774	Is not Beer
1·0048	0·9911	1·0136	5·19	6·48	11·35	1·0522	2·35	3·15	3·39	13·07	74·0	.....	36775	
1·0098	0·9927	1·0171	4·19	5·24	9·18	1·0473	2·13	4·08	4·26	11 84	64·0	.....	36776	

BULLETIN No. 196—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report (Is not expression of opinion.)
						DISTRICT OF ST. HYACINTHE—	
1909							
July 20	Beer or Ale.	947	N. Lord, St. Jean..	3 bots.	45	Labatt, London, Ont	....
" 21	" ..	948	J. Rivet, Sorel.....	3 "	40	J. H. R. Molson & Bros., Montreal.	....
" 22	" ..	949	J. L. H. Houde, Nicoliet.	3 "	30	Rock Springs Brewery, Quebec.	....
Aug. 2	" ..	950	J. Beauregard & fréres, Windsor Mills.	3 "	45	Silver Springs Brewery, Sherbrooke.	....
" 3	" ..	951	Silver Springs Brewery, Ltd., Sherbrooke.	3 "	....	Vendors..... ...	....
						DISTRICT OF MONTREAL—	
July 15	Beer or Ale.	40245	Reinhardt & Sons, Montreal.	3 bots.	30	Vendors	XXX Pale Ale .....
" 15	" ..	40246	The Nat. Brewries, Ltd., Montreal.	3 "	20	"	Ecker's Indian Pale Ale.
" 16	" ..	40248	Dawes & Co., Lachine, P.Q.	3 "	25	"	Black Horse, India Pale Ale.
" 17	" ..	40249	R. Martel, 51 Vitre st,, Montreal.	3 "	31	Jno. H. R. Molson & Bros.	India Pale Ale. ....
" 17	" ..	40252	" ..	3 "	31	Beauport Brewing Co	" .....
						DISTRICT OF OTTAWA—	
Aug. 23	Beer or Ale.	41244	The Carling B. & M. Co., Ltd., Ottawa	3 qts..	38	Vendors	Pale Bitter Ale ....
" 23	" ..	41245	Dawes & Co., Ltd., Ottawa.	2 "	36	"	Dawes India Pale Ale
" 23	" ..	41246	Capital Brewing Co., Ltd., Ottawa.	3 "	40	"	Capital Ale.... .....
" 23	" ..	41247	L. Davis, Ottawa...	3 "	40	O'Keefe's, Ltd., Toronto.	O'Keefe's "Amber" Ale.
" 23	" ..	41248	John Labatt, Ottawa	3 "	38	Vendor.	India Pale Ale .....
" 23	" ..	41281	"	3 "	40	"	"Extra Stock".....
						DISTRICT OF KINGSTON—	
Aug. 5	Beer or Ale.	41160	John Fisher, Portsmouth.	3 bots.	45	Vendor..... ...	....
" 5	" ..	41161	R. J. Lawler, Kingston.	3 "	45	J. McCarthy & Son, Prescott.	....
" 5	" ..	41162	J. McParlan d, Kingston.	3 "	45	Labatt's, London....	....
" 6	" .	41163	James Roy, Belleville.	3 "	40	Vendor.....	....
" 6	" ..	41164	Portlope B.& M. Co	3 "	45	Vendors....	.....

SESSIONAL PAPER No. 14

ALE (BEER).

Results of Analysis																
Sp. Gr. at 15·5°.	Sp. Gr. of Distillate at 15·5°.	Sp. Gr. of Dealcoholized residue.	Alcohol. By Weight.	Alcohol. By Volume.	Alcohol. As proof spirit.	Sp. Gr. of Original Worts.	Malt used, lbs. per Gallon.	Total Solids in Beer (determined).	Residual Solids (from tables).	Solids in Original Worts.	Degree of Fermentation.	Preservatives.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
J. C. ROULEAU, INSPECTOR.														
			p. c.	p. c.	p. c.			p. c.	p. c.	p. c.				
1·0082	0·9920	1·0163	4·62	5·78	10·13	1·0500	2·25	3·81	4·06	12·52	67·5	.....	947	
1·0043	0·9914	1·0127	5·00	6·24	10·94	1·0497	2·24	3·08	3·16	12·44	74·5	.....	948	
1·0096	0·9928	1·0166	4·12	5·16	9·04	1·0463	2·08	3·94	4·14	11·58	64·2	.....	949	
1·0074	0·9930	1·0146	4·00	5·00	8·77	1·0434	1·95	3·49	3·64	10·85	66·4	.....	950	
1·0070	0·9927	1·0163	4·19	5·24	9·18	1·0465	2·09	3·41	4·06	11·63	65·1	.....	951	
J. J. COSTIGAN, INSPECTOR.														
1·0036	0·9935	1·0101	3·71	4·63	8·13	1·0365	1·64	2·20	2·52	9·12	72·3	.....	40245	
1·0094	0·9922	1·0173	4·50	5·63	9·86	1·0500	2·25	4·00	4·31	12·52	65·5	.....	40246	
1·0054	0·9914	1·0138	5·00	6·24	10·94	1·0508	2·29	3·07	3·44	12·72	72·1	Trace of salicylic acid.	40248	
1·0061	0·9914	1·0144	5·00	6·24	10·94	1·0514	2·31	3·56	3·59	12·87	72·1	"	40249	
1·0091	0·9927	1·0167	4·19	5·24	9·18	1·0469	2·11	3·72	4·16	11·74	64·5	.....	40252	
J. A. RICKEY, INSPECTOR.														
1·0097	0·9913	1·0183	5·06	6·32	11·08	1·0558	2·51	4·31	4·56	13·98	67·4	.....	41244	
1·0073	0·9909	1·0153	5·31	6·63	11·62	1·0550	2·48	3·51	3·81	13·78	72·3	.....	41245	
1·0061	0·9917	1·0140	4·81	6·02	10·54	1·0494	2·22	3·49	3·37	12·36	71·8	.....	41246	
1·0101	0·9927	1·0174	4·19	5·24	9·18	1·0476	2·14	4·11	4·34	11·91	63·6	.....	41247	
1·0097	0·9916	1·0175	4·87	6·10	10·67	1·0534	2·40	4·22	4·36	13·37	67·4	.....	41248	
1·0097	0·9913	1·0181	5·06	6·32	11·08	1·0556	2·50	4·28	4·51	13·93	67·6	.....	41281	
JAS. HOGAN, INSPECTOR.														
1·0066	0·9904	1·0157	5·62	7·01	12·30	1·0579	2·61	3·72	3·91	14·51	73·0	.....	41160	
1·0079	0·9904	1·0171	5·62	7·01	12·30	1·0593	2·67	4·20	4·26	14·86	71·3	.....	41161	
1·0080	0·9917	1·0163	4·81	6·02	10·54	1·0517	2·33	3·77	4·06	12·94	68·6	.....	41162	
1·0061	0·9917	1·0141	4·81	6·02	10·54	1·0495	2·23	3·18	3·51	12·39	71·7	.....	41163	
1·0081	0·9909	1·0165	5·31	6·63	11·62	1·0562	2·52	4·02	4·11	14·08	70·8	.....	41164	

BULLETIN No. 196—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Addres of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
DISTRICT OF TORONTO—							
1909.							
Aug. 3	Beer or Ale.	41329	Taylor & Bates, St. Catherines.	3 qts.	50	Vendors	India Pale Ale.....
" 11	" .	41330	Grant's Springs Brewery Co., Ltd., Hamilton.	3 "	40	"	East India Pale Ale..
" 18	" .	41331	Clooney Estate, 928 Bloor Street West, Toronto.	3 "	45	The Dom. Breweries Co., Ltd., Toronto.	India Pale Ale.....
" 18	" .	41332	J. H. King, 112-116 Dundas St., Toronto.	3 "	45	Toronto B. & M. Co., Ltd., Toronto.	Pale Ale.....
" 18	" .	41333	J. L. Starkey, 837 Queen Street West, Toronto.	3 "	45	The Cosgrove Brewing Co., Ltd., Toronto.	" .....
DISTRICT OF LONDON—							
July 22	Beer or Ale.	30686	C. J. Watson, Guelph	3 bots.	75	Halliday Bros., Guelph.	East Kent Ale.....
" 23	" .	30692	Walsh Bros., Stratford.	3 "	45	John Labatt, London, Ont.	... .
" 26	" .	30802	Walter Saults, Goderich.	3 "	40	Berlin Brewing Co., Berlin, Ont.	Pilsener Beer.. .....
" 29	" .	30813	Chas. B. Pugh, Clinton.	3 "	30	Cosgrove Brewing Co., Toronto.	....
DISTRICT OF WINDSOR—							
July 23	Beer or Ale.	35980	J. H. Price, St. Thomas.	3 qts.	50	Rudolph & Begg, St. Thomas	....
" 23	" .	35981	J. H. Price, St. Thomas.	3 "	50	Cosgrove Brewing Co., Toronto.	.....
" 23	" .	35982	A. E. Ponsford, St. Thomas.	3 "	50	John Labatt, London.	... .
" 23	" .	35983	A. E. Ponsford, St. Thomas.	3 "	50	Carling B. & M. Co., London.	....
" 23	" .	35984	E. J. Butler, St. Thomas.	3 "	50	Walkerville Brewing Co., Walkerville..	.....
DISTRICT OF MANITOBA—							
July 23	Beer or Ale.	39741	P. Shea, Winnipeg..	3 .	50	McDonagh & Shea, Winnipeg, Man.	India Pale Ale.... ..
" 26	" .	39742	Geo. Vetie " ..	3 "	75	Bass & Co. (Bottled by C. C. Hibbert & Co., London, Eng.)	Pale Ale.....
" 26	" .	39743	Green & Co. " ..	3 "	75	The Empire Brewing Co., Ltd . Brandon	Empire Ale.....

ALE (BEER).

Sp. Gr. at 15·6°.	Sp. Gr. of Distillate at 15·5°.	Sp. Gr. of Dealcoholized residue.	Alcohol. By Weight.	Alcohol. By Volume.	Alcohol. As proof spirit.	Sp. Gr. of Original Worts.	Malt used, lbs. per Gallon.	Total Solids in Beer (determined).	Residual Solids (from tables).	Solids in Original Worts.	Degree of Fermentation.	Preservatives.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
Results of Analysis.														
H. J. DAGER, INSPECTOR.														
			p. c.	p. c.	p. c.			p. c.	p. c.	p. c.				
1·0087	0·9918	1·0168	4·75	5·94	10·40	1·0516	2·32	3·74	4·19	12.92	67·5	.....	41329	
1·0143	0·9916	1·0224	4·87	6·10	10 67	1·0583	2·62	5·39	5·59	14·61	61·7	.....	41330	
1·0078	0·9902	1·0169	5 75	7·17	12·57	1·0601	2 70	4·02	4 21	15·06	72·0	.....	41331	
1·0082	0 9912	1·0165	5·12	6·40	11 21	1 0545	2·73	4·08	4·11	13·65	69·9	.....	41332	
1·0073	0·9908	1·0163	5·37	6·71	11·76	1·0565	2·54	3·78	4·06	14·15	71·3	.....	41333	
T. KIDD, INSPECTOR.														
1·0033	0 9912	1 0121	5·12	6·40	11 21	1·0501	2 25	2·88	3·01	12·54	75·9	.....	30686	
1·0079	0 9920	1·0164	4·62	5·78	10·13	1·0501	2·25	3·75	4·09	12·54	67·4	.....	30692	
1·0145	0·9941	1·0205	3·35	4·20	7·36	1·0441	1·98	4·84	5·11	11·03	53·6	.....	30802	
1·0063	0·9908	1·0171	5·37	6·71	11 76	1·0573	2·58	3·92	4·26	14·36	73·1	.....	30813	
JNO. TALBOT, INSPECTOR.														
1·0171	0·9926	1·0245	4·25	5·32	9 31	1·0552	2·48	5·84	6·11	13·83	55·8	.. ..	35980	
1·0055	0·9905	1·0148	5·56	6·94	12·16	1·0565	2·54	3·58	3·69	14·15	73·9	Sulphites	35981	
1·0109	0 9925	1·0181	4·31	5·39	9·45	1·0493	2 22	4·16	4·51	12·34	63.4	„	35982	
1·0072	0·9913	1·0157	5·06	6·32	11·08	1·0532	2·39	3·58	3·91	13·32	70·6	„	35983	
1·0067	0·9915	1 0150	4·94	6·17	10·81	1·0515	2·32	3 40	3·74	12·89	71·0	„	35984	
A. C. LARIVIÈRE, INSPECTOR.														
1·0086	0·9921	1·0165	4·56	5·71	9·99	1·0497	2·23	3·75	4·11	12·44	66·9	.....	39741	
1·0084	0·9895	1·0186	6·21	7·74	13·57	1·0651	2·93	4·28	4·64	16·33	71·6	.. ..	39742	
1·0128	0·9924	1·0199	4·37	5·17	9·58	1·0516	2·32	4·83	4·96	12·92	61·6	.....	39743	

BULLETIN No. 196.—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report (is not an expression of opinion).
DISTRICT OF CALGARY—							
1909.							
July 29.	Beer or Ale.	35573	Calgary B. & M. Co. Calgary.	3 qts.	50	Vendors	
Aug. 7.	"	35575	Great West Liquor Co., Calgary.	"	75	Edward L. Drewery, Winnipeg.	
" 7.	"	35576	Calgarry Wine & Spirit Co., Calgary	"	75	Bass & Co., London, Eng.	
" 10	"	35577	Edmonton B. & M. Co., Calgary.	"	50	Vendors	
" 10	"	35600	Edmonton Wine & Spirit Co., Calgary	"	60	Bass & Co., London, Eng.	
DISTRICT OF VANCOUVER—							
July 20	Beer or Ale.	37681	Royal Brewing Co., Vancouver, B.C.	3 qts.	50	Vendors	XXX brand
" 20	"	37682	Pacific Bottling Works, Vancouver.	"	60	Seattle B. & M. Co., Seattle, Wash.	
" 20.	"	37683	McLaren & Urquhart Vancouver.	"	60	Calgary Brewing Co., Calgary, Alta.	Bottled by A. E. Suckling & Co., Vancouver.
" 20.	"	37684	Hughes Bros., Vancouver.	"	45	Vancouver Brewries, Vancouver.	Alexandra
" 20.	"	37685	A. E. Suckling, Vancouver.	"	60	Olympia Brewing Co, Olympia, Wash.	Olympia
DISTRICT OF VICTORIA—							
Aug. 5.	Beer or Ale.	41521	Windsor Crocery Co., Victoria, B.C.	3 qts.	45	Victoria Phoenix Brewing Co., Victoria, B.C.	Victoria Phoenix Ale.
" 5.	"	41522	Saunders Grocery Co., Ltd, Victoria.	"	75	Bass & Co., Burton-on-Trent, Eng.	Pale Ale. Bottled by Blood, Wolfe & Co., Liverpool.
" 6.	"	41523	West End Grocery Co., Ltd., Victoria.	"	50	Labatt's, London, Ont.	India Pale Ale.
" 6.	"	41524	Fred Carne, Victoria.	"	50	Silver Spring Brewery Co., Victoria, B.C.	Tates English Ale
" 9.	"	41525	Copas & Young, Victoria.	"	50	Bass & Co., Burton-on-Trent, Eng.	Bottled by E. & J. Bourke, Dublin & Liverpool.

SESSIONAL PAPER No. 14

ALE (BEER).

Sp. Gr. at 15·5°	Sp. Gr. of Distillate at 15·5°.	Sp. Gr. of Deal coholized residue.	Alcohol. By Weight.	Alcohol. By Volume.	Alcohol. As proof spirit.	Sp. Gr. of Original Worts.	Malt used, lbs. per Gallon.	Total Solids in Beer (determined.	Residual Solids (from tables).	Solids in Original Worts.	Degree of Fermentation.	Preservatives.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
Results of Analysis.														
R. W. FLETCHER, INSPECTOR.														
			p. c.	p. c.	p. c			p. c.	p. c.	p. c.				
1·0063	0·9901	1·0148	5·81	7 25	12·70	1·0585	2 63	3·99	3·69	14·66	74·8	....	35573	
1 0083	0·9909	1·0171	5·31	6·63	11·62	1·0568	2·56	4 21	4 26	14 23	70·0	.....	35575	
1·0014	0·9880	1·0108	7.27	9·04	15·85	1·0651	2·83	2·48	2·69	16·33	83·5	....	35576	
1·0012	0·9906	1·0104	5·50	6·86	12·03	1·0516	2·32	2·40	2·59	12·92	79·9	.....	35577	
1·0021	0 9879	1·0128	7·33	9·13	15·99	1·0677	3·04	3·21	3·19	16·98	81·2	.....	35600	
J. F. POWER, INSPECTOR.														
1·0033	0 9935	1·0098	3·71	4·63	8·13	1·0362	1·63	2·30	2·44	9·05	7·30	.....	37681	
1·0120	0·9923	1·0195	4·44	5.55	9 72	1·0517	2·33	4.63	4·86	12·94	62 4	.....	37682	
1·0192	0 9942	1·0243	3·29	4 12	7 23	1·0474	2·13	6·12	6·06	11·86	48·9	.....	37683	
1·0133	0 9926	1·0205	4·25	5.32	9 31	1·0512	2·30	4·84	5·11	12·82	60·0	Sulphites	37684	
1 0115	0·9925	1·0188	4·31	5·39	9·45	1·0500	2·25	4·44	4·69	12·52	62·5	.....	37685	
D. O'SULLIVAN, INSPECTOR.														
1·0117	0·9961	1·0179	2·22	2·79	4·89	1·0326	1·47	4 38	4·46	8·14	45·2	.....	41521	
1·0034	0·9885	1·0143	6·93	8·63	15·12	1·0608	2.74	3·39	3·56	15·24	76·6	.....	41522	
1·0089	0·9914	1 0161	5·00	6 24	10 94	1·0531	2·39	4·12	4·01	13·30	69·9	.....	41523	
1·0079	0·9922	1·0150	4 50	5·63	9·86	1 0477	2·15	3·89	3 74	11·94	68·7	.....	41524	
1·0064	0 9905	1·0158	5·56	6·94	12·16	1·0575	2·59	3.60	3·94	14·41	72 6	.....	41525	

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not expression of opinion).
DISTRICT OF NOVA SCOTIA—							
1909.							
Aug. 16	Lager Beer..	41731	T. F. Courtney & Co., Halifax, N.S.	6 Pts.	90	Anheuser Busch B. Co., St. Louis, U.S.	Budweiser
" 16	"	41732	John Tobin & Co., Halifax, N.S.	6 "	75	Pabst Brewing Co., Milwaukee, U.S.	Blue Ribbon
" 16	"	41733	Kelley & Glassey, Halifax, N.S.	6 "	75	Jos. Schlitz Br. Co., Milwaukee, U.S.	
" 16	"	41734	Dillon Bros., Halifax, N.S	6 "	70	Everard Brewing Co. New York, U.S.	Red Star
" 18	"	41735	John McGrath, Halifax, N.S.	6 "	1.00	Anheuser Busch B. Co., St. Louis, U.S.	Budweiser
DISTRICT OF NEW BRUNSWICK—							
July 19	Lager Beer..	39506	Simeon Jones, Ltd., St. John, N.B.	3 Bots	25	Canadian Breweries Ltd., Montreal.	Ekerts
" 21	"	39507	James Ready, Ltd., Fairville, St. John, N.B.	3 "	40	Vendors	
" 22	"	39508	John O'Regan, St. John, N.B.	3 "	40	Jos. Schlitz, B. Co., Milwaukee, U.S.	Schlitz
" 23	"	39509	Comeau & Sheehan, St. John, N.B.	3 "	40	Anheuser Busch B. Co., St. Louis, U.S.	Budweiser
" 23	"	39510	Wm. E. McIntyre, St. John, N.B.	6 "	60	The Ebling B. Co., New York, U.S.	Sunlight
DISTRICT OF QUEBEC—							
July 15	Lager Beer..	36777	E. A. Delisle, 29 Cote Genevieve.	3 Bots	30	The Beauport Brewing Co., Quebec.	
" 15	"	36778	Jules Rochette, 7 Rue Deligny.	3 "	35	G. E. Amyot, Quebec.	
" 15	"	36779	J. B. Cote, 381 Rue St. Jean.	3 "	45	George Patry, Quebec.	
" 15	"	36780	E. Lafrance, 272 Rue St. Jean.	3 "	45	" "	
" 15	"	36781	" "	3 "	30	G. E. Amyot, Quebec.	
DISTRICT OF ST. HYACINTHE—							
July 19	Lager Beer..	953	S. Gauthier, Farnham,	3 Bots	60	The Union Brewery, Ltd., Montreal.	Kuntz
" 22	"	954	M. H. Bernier, Victoriaville.	3 "	75	L. Chaput Fils & Cie., Montreal.	Budweiser
Aug. 4	"	955	J. F. Chicoine, Rougemont.	3 "	40	Geo. E. Amyot B. Co., Ltd., Quebec.	B. B
" 5	"	956	A. H. Hubert, Marieville.	3 "	60	L. Chaput Fils & Cie., Montreal.	Blue Ribbon
" 5	"	957	R. Davignon, Iberville.	3 "	40	O. Archambault, Iberville.	Salvador

LAGER BEER.

Specific Gravity at 15.5°.	Specific Gravity of Distillate at 15.5°.	Specific Gravity of Dealcoholized Residue.	Results of Analysis. Alcohol. By Weight.	By Volume.	As Proof Spirit.	Specific Gravity of Original Worts.	Malt Used, Lbs. per Gallon.	Total Solids in Beer determined.	Residual Solids (from tables).	Solids in Original Worts.	Degree of Fermentation.	Preservatives.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
R. J. WAUGH, INSPECTOR.														
			p.c.	p.c.	p.c.			p.c.	p.c.	p.c.				
1·0153	0·9931	1·0220	3·94	4·93	8·64	1·0503	2·26	5·18	5·49	12·59	56·4	.....	41731	
1·0199	0·9949	1·0247	2·89	3·62	6·34	1·0446	2·01	5·85	6·16	11·16	44·8	.....	41732	
1·0114	0·9931	1·0181	3·94	4·93	8·64	1·0464	2·09	4·18	4·51	11·61	61·1	.....	41733	
1·0166	0·9939	1·0225	3·47	4·34	7·61	1·0471	2·12	5·56	5·61	11·79	52·4	.....	41734	
1·0156	0·9935	1·0222	3·71	4·63	8·13	1·0486	2·18	5·41	5·54	12·16	54·4	.....	41735	
J. C. FERGUSON, INSPECTOR.														
1·0101	0·9935	1·0204	3·71	4·63	8·13	1·0468	2·10	4·68	5·09	11·71	56·5	.....	39506	
1·0101	0·9931	1·0169	3.94	4·93	8·64	1·0452	2·03	3·80	4·81	11·31	62·8	.....	39507	
1·0113	0·9930	1·0181	4·00	5·00	8·77	1·0469	2·11	4·10	4·51	11·74	61·6	.....	39508	
1·0161	0·9936	1·0221	3·65	4·56	8·00	1·0481	2·16	5·46	5·51	12·04	54·2	.....	39509	
1·0158	0·9938	1·0215	3·53	4·42	7·74	1·0465	2·09	4·83	5·36	11·63	53·9	.....	39510	
E. BELAND, INSPECTOR.														
1·0131	0·9928	1·0201	4·12	5·16	9·04	1·0498	2·24	4·79	5·01	12·47	59·7	.....	36777	
1,0140	0·9939	1·0200	3·47	4·34	7·61	1·0446	2·00	4·84	4·99	11·16	55·3	.....	36778	
1·0161	0·9929	1·0232	4·06	5·08	8·90	1·0524	2·36	5·72	5·79	13·12	55·1	.....	36779	
1·0164	0·9939	1·0226	3·47	4·34	7·61	1·0472	2·12	5·45	5·64	11.81	52·2	.....	36780	
1·0131	0·9938	1·0193	3·53	4·42	7·74	1·0443	1·99	4·59	4·81	11·08	74·6	.....	36781	
J. C. ROULEAU, INSPECTOR.														
1·0158	0·9937	1·0222	3·59	4·49	7·87	1·0479	2·15	4·95	5·54	11·94	53·6	.....	953	
1·0153	0·9932	1·0220	3·88	4·85	8·51	1·0498	2·24	5·16	5·49	12·47	64·0	.....	954	
1·0124	0·9934	1·0192	4·00	5·00	8·77	1·0480	2·16	4·44	4·79	12·01	60·1	.....	955	
1·0175	0·9948	1·0227	2·94	3·69	6·47	1·0431	1·94	5·54	5·66	10·78	47·5	.....	956	
1·0114	0·9946	1·0171	3·06	3·83	6·72	1·0384	1·73	4·00	4·26	9·60	55·6	.....	957	

BULLETIN No. 196—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
DISTRICT OF MONTREAL—							
1909.							
July 15	Lager Beer..	40250	Reinhardt & Sons, Montreal.	3 Bots	30	Vendors	Vienna
" 15	" ..	40251	The Nat. Breweries, Ltd., Montreal.	"	25	"	Ekers Bohemian
" 19	" ..	40253	B. Ram, 395 St. Lawrence St., Montreal	"	34	Union Brewing, Ltd, Montreal.	
" 19	" ..	40254	G. Daoust, 140 St. Cath, E, Montreal	5 "	50	Reinhardt & Co., Toronto.	Salvador
" 19	" ..	40255	F.X. St. Charles, Ltd St. Gabr'l st, Mon'l	6 "	70	Schlitz, Milwaukee..	Schlitz
DISTRICT OF OTTAWA—							
Aug. 23	Lager Beer..	41249	The Carling B. & M. Co., Ltd., Ottawa.	6 Pts.	60	Vendors	Canada Club
" 23	" ..	41250	The Capital B. & M. Co., Ltd., Ottawa.	"	35	"	Capital
" 24	" ..	41251	L. Davis, Ottawa	"	60	O'Keefe's, Ltd., Toronto.	Pilsener
" 24	" ..	41252	Chelsea Trading Co.,	"	75	Unknown	Schlitz
" 24	" ..	41253	" " ..	"	75	Anheuser Busch B. Co., St. Louis, U.S	Budweiser
DISTRICT OF KINGSTON—							
Aug. 5	Lager Beer..	41165	R. Stevenson, Kingston.	3 Bots	45	Bajns Brewery	
" 5	" ..	41166	R. J. Lawlor, Kingston.	"	45	Reinhardt & Co., Toronto.	
" 5	" ..	41167	J. McParland, Kingston.	"	45	Schlitz, Milwaukee.	
" 6	" ..	41168	Wesley Bullen, Belleville.	"	45	Carling, London, Ont	
" 6	" ..	41169	W. D. Rodbourne, Belleville.	"	45	O'Keefe, Toronto	
DISTRICT OF TORONTO—							
Aug. 11	Lager Beer..	41334	The Hamilton Brew. Asso, Ltd, Hamilt'n	3 Bots	60	Vendors	Regal
" 18	" ..	41335	W. J. Donley, 205 Parliament st., Toronto	"	45	Copeland B. Co., Ltd Toronto.	Budweiser C. B. Co., Ltd, C.B. Co.
" 18	" ..	41336	Thos. Walker, 212 Queen st, e, Toronto	"	45	Reinhardt & Co., Toronto.	Bavarian
" 18	" ..	41337	T. K. Haffey, 216 Wilton Ave., Toronto.	"	45	The O'Keefe B. Co., Ltd, Toronto.	Pilsener
" 19	" ..	41338	D. Hayes, 420 King st., e, Toronto.	"	45	The Korman B. Ltd Toronto.	Perfecto

LAGER BEER.

Specific Gravity at 15·5°.	Specific Gravity of Distillate at 15·5°.	Specific Gravity of Dealcoholized residue.	Results of Analysis. Alcohol. By Weight.	By Volume	As Proof Spirit.	Sp. Gravity of Original Worts.	Malt used, lbs. per Gallon.	Total Solids in Beer (determined).	Residue Solids (from tables.)	Solids in Original Worts.	Degree of Fermentation.	Preservatives.	No. of Sample.	Remarks, and Opinion of the Chief Analyst.
J. J. COSTIGAN, INSPECTOR.														
			p.c.	p.c.	p.c.			p.c.	p.c.	p.c.				
1·0035	0·9934	1·0102	3·76	4·71	8·26	1·0371	1·67	2·13	2.54	9·27	72·6	.....	40250	
1·0125	0·9938	1·0184	3·53	4·42	7·74	1·0434	1·95	4·34	4·59	10·85	57·6	.....	40251	
1·0126	0·9938	1·0189	3·53	4·42	7·74	1·0439	1·97	4·37	4·71	10·98	57·1	.....	40253	
1·0090	0·9936	1·0161	4·00	5·00	8·77	1·0449	2·02	3·75	4·01	11·23	64·2	.....	40254	
1·0140	0·9937	1·0204	3·59	4·49	7·87	1·0459	2·06	4·80	5·09	11·48	55·6	.....	40255	
J. A. RICKEY, INSPECTOR.														
1·0147	0·9943	1·0204	3·24	4·05	7·10	1·0431	1·94	4·87	5·09	10·78	52·7	.....	41249	
1·0090	0·9934	1·0151	3·76	4·71	8·26	1·0420	1·89	3·35	3·76	10·50	64·2	.....	41250	
1·0086	0·9938	1·0146	3·53	4·42	7·74	1·0396	1·78	3·24	3·64	9·90	63·2	.....	41251	
1·0115	0·9931	1·0184	3·94	4·93	8·64	1·0467	2·10	4·12	4·59	11·63	60·7	.....	41252	
1·0155	0·9932	1·0222	3·88	4·85	8.51	1·0509	2·25	5·12	5·54	12·52	55·7	.....	41253	
JAS. HOGAN, INSPECTOR.														
1·0100	0·9945	1·0155	3·12	3·90	6·84	1·0373	1·68	3·60	3·86	9·32	58·5	.....	41165	
1·0078	0·9925	1·0151	4·31	5·39	9·45	1·0463	2·08	3·65	3·76	11·58	67·5	.....	41166	
1·0138	0·9938	1·0204	3·53	4·42	7·74	1·0454	2·04	4·76	5·09	11·36	55·1	.....	41167	
1·0114	0·9943	1·0173	3·24	4·05	7·10	1·0400	1·80	3·96	4·31	10·00	56·9	.....	41168	
1·0098	0·9937	1·0161	3·59	4·49	7·87	1·0416	1·87	3·81	4·01	10·40	61·4	.....	41169	
H. J. DAGER, INSPECTOR.														
1·0154	0·9935	1·0220	3·71	4.63	8·13	1·0484	2·18	5·26	5·49	12·11	54·6	.....	41334	
1·0124	0·9927	1·0202	4·19	5·24	9·18	1·0504	2·27	4·80	5·04	12·62	60·0	.....	41335	
1·0110	0·9925	1·0169	4·31	5·39	9·45	1·0481	2·16	4·42	4·21	12·04	65·0	.....	41336	
1·0075	0·9932	1·0132	3·88	4·85	8·51	1·0410	1·85	3·36	3·29	10·25	67·9	.....	41337	
1·0051	0·9936	1·0110	3·65	4·56	8·00	1·0370	1·67	2·45	2·74	9·25	70·4	.....	41238	

BULLETIN No. 196—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
			DISTRICT OF LONDON—				
1909.							
July 22.	Lager Beer.	30685	E. J. Watson, Guelph.	3 bots.	25	Holliday	East Kent Lager
" 23.	" .	30693	Walsh Brothers, Stratford.	"	30	Kuntz & Co., Waterloo.	
" 26.	" .	30801	Walter Sault, Goderich.	"	40	Berlin Brewery	
" 29.	" .	30812	Chas. B. Pugh, Clinton.	"	30	Cosgrove Brewing Co., Toronto.	
			DISTRICT OF WINDSOR—				
" 22.	Lager Beer.	35975	E. B. Smith, London, Ont.	3 bots.	32	H. Kuntz, Hamilton.	
" 22.	" .	35976	E. B. Smith, London.	"	33	C. H. Huether, Hamilton.	
" 22.	" .	35977	Ed. Shea, London, Ont.	"	35	Kuntz Brewing Co., Waterloo.	
" 22.	" .	35978	Ed. Shea, London, Ont.	"	35	Carling B. & M. Co., London, Ont.	
" 22.	" .	35979	Scandrett Bros . . .	"	38	Schlitz Co., Milwaukee, U.S.	
			DISTRICT OF MANITOBA—				
July 23.	Lager Beer.	39746	Blackwood Limited, Winnipeg.	3 bots.	....	Vendors	
" 23.	" .	39747	P. Shea, Winnipeg.	"	. .	McDonagh & Shea, Winnipeg.	
" 23.	" .	39748	Lemire & Co., Winnipeg.	"	....	The Moosejaw B. & M. Co., Ltd., Moosejaw, Sask.	
			DISTRICT OF CALGARY—				
Aug. 5.	Lager Beer.	35574	Lethbridge B. & M. Co., Ltd., Lethbridge.	3 qts.	50	Vendors	
July 29.	" .	35578	Calgary B. & M. Co., Calgary.	"	50	"	
" 29	" .	35579	Golden West B. Co., Calgary.	"	50	"	
Aug. 10.	" .	35580	Strathcona B. & M. Co., Strathcona.	"	50	"	
" 10.	" .	35581	Edmonton B. & M. Co., Edmonton.	"	50	"	

SESSIONAL PAPER No. 14

LAGER BEER.

Results of Analysis.														
Sp. Gr. at 5·15°	Sp. Gr. of Distillate at 15·5°.	Sp. Gr. of Dealcoholized residue.	Alcohol. By Weight.	Alcohol. By Volume.	Alcohol. As proof spirits.	Sp. Gr. of Original Worts.	Malt used, lbs. per Gallon.	Total Solids in Beer (determined.)	Residual Solids (from tables).	Solids in Original Worts.	Degree of Fermentation.	Preservatives.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
T. KIDD, INSPECTOR.														
			p. c.	p. c.	p. c.			p. c.	p. c.	p. c.				
1·0094	0·9940	1·0152	3·41	4·27	7·49	1 0393	1·77	3·40	3·79	9·82	61·4	.....	30685	
1·0164	0·9940	1·0227	3·41	4.27	7.49	1.0468	2·10	5·35	5·66	11·71	51.6	.....	30693	
*	*	*	*	*	*	*	*	*	*	*	*	.....	30801	
1·0157	0·9947	1.0209	3·00	3·76	6·58	1·0418	1·88	4 82	5·21	10 45	50·1	.....	30812	
JNO. TALBOT, INSPECTOR.														
1·0172	0 9939	1·0230	3·47	4·34	7·61	1·0476	2·14	5.41	5·74	11·91	51.8	.....	35975	
1.0131	0·9941	1·0191	3·35	4.20	7·36	1·0427	1·92	4·37	4·76	10 68	55·4	.....	35976	
1.0164	0·9945	1·0221	3·12	3·90	6·84	1 0439	1·97	5·13	5·51	10·98	49.8	.....	35977	
1·0146	0·9943	1.0200	3·24	4·05	7·10	1.0427	1·92	4.70	4·99	10·68	53 3	.....	35978	
1·0096	0.9927	1·0167	4·19	5·24	9·15	1·0469	2·11	3·78	4·16	11·74	64·5	....	35979	
A. C. LARIVIERE, INSPECTOR.														
1·0156	0·9940	1·0208	3·41	4·27	7·49	1·0449	2 02	4·70	5·19	11·23	53·8	..... .	39746	
1 0144	0 9938	1·0205	3·53	4·42	7·74	1·0455	2·05	4·62	5·11	11·38	55·1	....	39747	
1·0180	0·9945	1·0233	3·12	3·90	6·84	1·0451	2·03	5·42	5·81	11·28	4·85	.....	39748	
R. W. FLETCHER, INSPECTOR.														
1.0161	0·9942	1·0218	3·29	4·12	7·23	1·0449	2·02	5·32	5·44	11.23	51·5	.....	35574	
1·0157	0·9939	1·0220	3 47	4·34	7·61	1·0466	2·10	5·22	5.49	11·66	52·9	.. . ...	35578	
1·0137	0·9937	1·0199	3·59	4·49	7·87	1·0454	2·04	4 73	4 96	11·36	56·3	.....	35579	
1·0110	0·9936	1·0174	3.65	4 56	8·00	1·0434	1·95	4·05	4·34	10·85	60·0	....	35580	
1·0151	0·9934	1·0215	3·76	4·71	8.26	1·0484	2·18	5·22	5·36	12·11	55·7	... .	35581	

* Sample not received.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).
						DISTRICT OF VANCOUVER—	
1909.							
July 21.	Lager Beer.	37686	Gold Seal Liquor Co., Vancouver.	3 qts.	50	Victoria Phœnix B. Co., Victoria.	
" 21.	"	37687	J. P. Turner, Vancouver.	"	75	Anheuser Busch B. Association Ltd., St. Louis, U.S.	Budweiser
" 21.	"	37688	3 Star Wine Co., Vancouver.	"	50	Dorfes Brewery, Washington.	
" 21.	"	37689	H. A. Urquhart, Vancouver.	"	75	Lemps, St. Louis, U.S.	
" 22.	"	37690	Vancouver Breweries Vancouver.	"	50	Vancouver Breweries Ltd.	Cascade
						DISTRICT OF VICTORIA—	
Aug. 5.	Lager Beer.	41516	WindsorGrocery Co., Victoria, B.C.	3 qts.	75	Anheuser Busch B. Association Ltd., St. Louis, U.S.	Budweiser
" 5.	"	41517	Saunders Grocery Co, Ltd., Victoria, B.C.	"	75	America Brewing Co., St. Louis, U.S.	A.B.C. Bohemian
" 6.	"	41518	Fred. Carne, Victoria, B.C.	"	40	Vancouver Breweries Ltd., Vancouver.	Cascade
" 6.	"	41519	D. H. Ross & Co., Victoria, B.C.	"	45	Victoria Phœnix B. Co., Victoria, B.C.	Victoria Phœnix Export.
" 6.	"	41520	D. H. Ross & Co., Victoria, B.C.	"	60	Seattle B. & M. Co., Seattle, U.S.	Rainier Beer

SESSIONAL PAPER No. 14

LAGER BEER.

Results of Analysis.																
Sp. Gr. at 15·5°.	Sp. Gr. of Distillate at 15·5°.	Sp. Gr. of Dealcoholized residue.	Alcohol. By Weight.	Alcohol. By Volume.	Alcohol. As proof spirit.	Sp. Gr. of Original Worts.	Malt used, lbs. per Gallon.	Total Solids in Beer, (determined).	Residual Solids (from tables).	Solids in Original Worts.	Degree of Fermentation.	Preservatives.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
J. F. POWER, INSPECTOR.														
			p. c.	p. c.	p. c.			p. c.	p. c.	p. c.				
1·0115	0·9935	1·0181	3·71	4·63	8·13	1·0445	2·00	4·19	4·51	11·13	59·5	....	37686	
1·0153	0·9931	1·0217	4·00	5·00	8·77	1·0500	2·25	5·44	5·41	12·52	56·8	..... .	37687	
1·0118	0·9928	1·0193	4·12	5·16	9·04	1·0492	2·21	4·81	4·81	12·31	60·9	.....	37688	
1·0090	0·9924	1·0165	4·37	5·47	9 58	1·0482	2·17	3·89	4 11	12 06	65·7	.....	37689	
1·0153	0·9923	1·0228	4·44	5·55	9·72	1·0550	2·47	5 34	5·69	13·78	58·7	.....	37690	
D. O'SULLIVAN, INSPECTOR.														
1·0151	0·9934	1·0219	3·76	4·71	8·26	1·0488	2·20	5·27	5·46	12·21	55·2	....	41516	
1·0130	0·9929	1·0198	4·06	5·08	8·90	1·0490	2·20	4·67	4·94	12 26	59·7	....	41517	
1·0162	0·9930	1·0234	4·00	5·00	8·77	1·0522	2 35	5·68	5·84	13·07	55·3	.....	41518	
1·0127	0·9943	1·0180	3·24	4·05	7·10	1·0407	1·83	4·34	4·49	10·18	55·9	.....	41519	
1·0125	0 9924	1·0202	4 37	5·47	9·58	1·0471	2·12	4·57	5 04	11·79	57·2	.....	41520	

APPENDIX R.

BULLETIN No. 197—LIME FRUIT JUICE (LIME JUICE.)

Ottawa, January 12, 1910.

W. J. Gerald, Esq.,
Deputy Minister of Inland Revenue.

Sir,—I have the honour to submit herewith a report upon 76 samples, purchased as lime juice, throughout the different inspectoral districts of Canada in December of 1909 and January, 1910.

The last examination (comprising 27 samples) of lime juice was made in 1902, and the results are published in Bulletin No. 83.

At that time I was supplied with six (6) samples of lime juice, whose genuineness was vouched for by the importers. These samples contained free citric acid averaging 7·74 per cent. A mean content of 7·66 per cent of free citric acid is yielded by the results of analysis of 42 samples of the present collection, which appear to be genuine, except that some may contain small amounts of added water. It would thus seem justifiable to establish at least 7·5 per cent of free citric acid as a normal amount for lime juice. When the article contains decidedly less than this amount, it is reasonable to infer the addition of water; and as the number 7·5 per cent has been deduced from a list of 42 samples, including 13 which show less than 7 per cent citric acid, it cannot be held that the standard suggested is too high.

The present report comprises :—

9	samples,	sold as lime juice cordials.
42	"	judged to be genuine lime juice.
13	"	judged to be abnormal, but are not declared to be adulterated.
12	"	adulterated under the Act.

In the absence of legal limits for density, citric acid content and other definitive characters of lime juice, it is impossible to declare adulteration in the cases of those samples which I have marked 'doubtful.' Where, however, there is addition of matter quite foreign to lime juice, and manifestly added for the purpose of taking the place of some natural constituent of lime juice, the article is clearly adulterated under Section 3 (*a*), (*b*), (*d*). It is not certain that the addition of a dye to *true lime juice* can be held to constitute adulteration; but the addition of a dye to a solution of tartaric acid in water is evidently made for the purpose of concealing inferiority and of enabling the product to be taken for a true lime juice. This constitutes adulteration under Section 3 (*h*).

Guided by the principles laid down, I have to declare twelve (12) samples of the present collection adulterated. Adulteration consists in the addition of tartaric acid as a substitute for citric acid, the natural acid of lime fruit, and in the use of a dye for the purpose of imitating the natural yellow colour of lime juice.

Were the samples in question sold as 'compounds,' they could not be declared adulterated, since Section 24 (*d*) of the Act provides for such articles. But I find nothing on the labels which could inform the purchaser that he was being supplied with anything else than the genuine juice of the lime fruit, and our inspectors have invoiced these samples as sold to them for lime juice.

In the case of thirteen (13) other samples I have used the word 'doubtful.' It will be readily understood that this word implies some standard of reference. The most important characteristic of the juice of the lime fruit is the presence of citric acid, associated with a natural fruit flavour, which gives palatability to the article as a beverage. The simplest form of adulteration is evidently the addition of water to the juice. This would have the effect of lowering the specific gravity (density), and of reducing the percentage of contained citric acid. In order to determine whether or not water has been added, it is necessary to establish the normal density of lime juice and to ascertain the normal percentage content of citric acid therein; also to determine the variations from such normal which may be exhibited by genuine lime fruit juice. Another character of lime fruit juice is its optical activity, and in the subjoined table I have brought together the results of recorded work upon samples believed to be genuine

No.	Specific Gravity.			Citric Acid.			Optical rotation in 2 dm tube.	Number of Samples.
	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.		
1	1·0398	1·0363	1·0381	8·12	7·35	7·74	+0°.0	6
2	1·0389	1·0265	1·0348	7·68	6·61	7·20	.....	5
3	.....	.....	1·0343	7·81	6·36	7·12	−0°.3	4
4	1·0403	1·0266	1·0331	8·82	6·02	7·66	−0°.5 to +0°.5	42
	Means ...	.....	1·0339	.....	.....	7·57	.....	57

1. From examination of 6 samples, Bull. 83, p. 17.
2. " " 5 " König, Nahrungs und Genussmittel, Bd. I, p. 887.
3. " " 4 " " " " " p. 1504.
   It is not certain that the numbers quoted refer to lime juice proper, and not to lemon juice.
4. From examination of 42 samples, reported in this Bulletin and probably genuine, but not guaranteed as such.

An examination of the tabulated results of analysis, and their comparison with the above means, will show the grounds upon which I have felt justified in declaring thirteen (13) samples to be of doubtful genuineness.

The standards for lime juice issued by the Bunde Deutscher Nahrüngsmittel-Fabrikanten und Händler (Deutsches Nahrungsmittelbuch: Zweite Auflage) in 1909, recognize (page 286) a first pressed juice (Muttersaft) and a second pressed juice (Nachpresse). This second pressing is the result of addition of water to the residue left from a first pressing of the fruit, and the product is necessarily a very inferior article. When the product of a second pressing is added to the first pressed juice it is required that the fact should be distinctly stated upon the label and that the article be sold as a mixture (Fruchtsaft mit Nachpresse). It may be that the low grade lime juice samples which I have characterized as doubtful are mixtures of the kind indicated. If such is the case, they should undoubtedly be plainly labelled in conformity with the facts.

LIME FRUIT JUICE CORDIALS, OR LIME JUICE CORDIALS.

Nine samples are labelled as *Cordials*. This term is apparently applied to a diluted and sweetened lime juice, and a lime juice cordial differs from plain lime juice merely by the addition of water and sugar. The amount of water added varies much in different brands ; and for the nine samples now reported, the extremes are about 43 per cent, and 81 per cent, calculated from the citric acid content. The amount of sugar added varies from about 20 per cent to over 50 per cent.

Since the lime juice is the characteristic component of these articles, it is evident that their value varies greatly, and the following conspectus is of interest :—

Sample.	Specific Gravity.	Citric Acid.	Added Water.	Approximate sugar added.
36695	1·1062	3·57	53·	20
38888	1·0984	1·43	81·	20
40383	1·1206	2·17	71·	25 (Glucose).
42868	1·2788	3·92	49·	50 (No preservatives).
42785	1·2301	2·87	62·	45
30872	1·2896	3·67	52·	50 (No preservatives).
44709	1·2351	4·34	43·	45 (No preservatives).
37801	1·1392	2·72	64·	30
40381	1·0168	7·00	8·	0 (No preservatives).

With four exceptions, these articles contain salicylic acid as a preservative. No mention of this fact is made on the label. Number 40381 is exceptional among these cordials in containing a high percentage of citric acid, very little added water, no sugar, and 7·27 per cent of alcohol equivalent to 15·85 per cent of proof spirit. This article is legally saleable only as a drug, or as an alcoholic beverage.

I beg to recommend the publication of this report as Bulletin No. 197.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

BOTTLED

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Quantity.	Cost.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report (Is not an expression of opinion.)
					$ c.		
DISTRICT OF NOVA SCOTIA—							
1909.							
Dec. 7	Bottled Lime Juice.	41760	R. B. Adams & Co., Halifax, N.S.	3 bots.	0 30	Dominion Syrup Co., Halifax, N.S.	Labelled pure.....
" 6	" ..	41761	National Drug Co., Halifax, N.S.	" .	0 25	Vendors.....	Sovereign Brand..
" 7	" ..	41762	Wentzells, Ltd., Halifax, N.S.	"	0 30	Croskill & Co., Halifax, N.S.	West India.....
" 8	" ..	41763	G. A. Cook & Co., Halifax, N.S.	" .	0 30	Unknown.....	" .....
" 15	" ..	41764	B. O. Bishop, Dartmouth, N.S.	" .	0 30	Nat. Drug & Chem. Co., Halifax, N.S.	Sovereign Brand..
DISTRICT OF PRINCE EDWARD ISLAND—							
Dec. 7	Bottled Lime Juice.	38611	A. B. Paquet, Souris.	3 pts. .	0 45	Frances Drake, New Glasgow, N.S.	.. ..
" 7	" ..	38612	Vincent McIsaac " .	" .	0 45	Bauld Bros., Ltd., Halifax, N.S.	Pure West India Lime Juice.
" 8	" ..	38613	H. Connolly, Charlottetown.	" .	0 45	Sussex Mineral Spr'g Co., Sussex, N.B.	Extra fine West India Lime Juice.
" 10	" ..	38614	R. T. Holman, Ltd., Summerside.	" .	0 45	National Drug Co., Halifk.	Sovereign Lime Juice.
" 10	" ..	38615	Sinclair & Stewart, Summerside.	" .	0 45	Havelock Mineral Spring Co., Havelock, N.S.	.....
DISTRICT OF NEW BRUNSWICK—							
Dec. 2	Bottled Lime Juice.	39623	The National Drug & Chemical Co., Ltd., St. John, N.B.	3 bots.	0 30	J. Cox Fillan, Dominica, W.I.	Received in bulk. Bottled by vendors.
" 14	" ..	39624	R. T. Mack, Fredericton, N.B.	" .	0 40	Nat. Drug & Chem. Co., Montreal.	West India Lime Juice. Received in bulk. Bottled by vendors.
" 16	" ..	39625	Geo. F. Crawford, St. Stephen, N.B.	" .	0 40	Can. Drug Co., Ltd., St, John, N.B.	Pure West India Lime Juice.
1910.							
Jan. 5	" ..	39626	Fairweather Bros., Moncton.	" .	0 50	Nat. Drug & Chem. Co,, Ltd., Montreal.	'Montserrat'.....
" 5	" ..	39627	J. McD. Cooke, Moncton.	" .	0 35	Nat. Drug & Chem. Co., Ltd., Toronto.	'Sovereign' .....
DISTRICT OF QUEBEC—							
Dec. 10	Bottled Lime Juice.	36692	W. G. Doyle, West Frenton.	3 bots.	1 35	Whitead & Turner, Quebec.	.....
" 10	" ..	36693	Lacasse & Audet, St. Edouard Frenton.	"	0 75	N. Turcotte & Cie, Quebec.	....
" 22	" ..	36694	J. Masson, 808 Rue St Valier.	" .	0 75	National Drug Co., Montreal.	....
" 22	" ..	36695	Jos. Falardeau, 271 Rue St. Joseph.	" .	0 75	L. B. Renaud & Cie., Quebec.	....
" 22	" ..	36696	" " ..	" .	1 05	J. A. Chabot, Quebec.	. .. .

SESSIONAL PAPER No. 14

LIME JUICE.

Results of Analysis.						Number of Sample.	Remarks and Opinion of the Chief Analyst.
Specific Gravity at 15° C.	Acidity per 100 cc in terms of cc.N.	Per cent weight in Vol.-Acidity calculated as citric acid.	Rotation in 2 drm. tube.	Preservatives.	Reaction with alcohol (after evaporation to a Syrup.)		
R. J. WAUGH, INSPECTOR.							
		p. c.					
1·0290	80·5	5·63	0·0	Salicylic acid present.	Bulky ppte..	41760	Low in acidity and contains a preservative.
1·0344	112·0	7·81	0·0	Salicylic acid trace.	" ..	41761	Genuine with trace of a preservative.
1·0313	98·5	6·89	—0·4	Salicylic acid present.	" ..	41762	Genuine but contains a preservative.
1·0294	90·0	6·30	—0·2	Salicylic acid trace.	" ..	41763	Genuine with a trace of preservative.
1·0340	108·0	7·56	—0·4	Salicylic acid present.	" ..	41764	Genuine but contains a preservative.
THEO. MOORE, INSPECTOR.							
1·0220	67·5	4·72	+1·5	Salicylic acid present.	Bulky ppte..	38611	Contains tartaric acid. Adulterated.
1·0328	102·5	7·17	0·0	" ..	" ..	38612	Genuine but contains a preservative.
1·0364	116·0	8·12	—0·4	Salicylic acid trace.	" ..	38613	Genuine but with a preservative added.
1·0345	111·5	7·80	0·0	Salicylic acid present.	" ..	38614	Genuine with a preservative.
1·0403	125·0	8·75	0·0	" ..	" ..	38615	Genuine but contains a preservative.
J. C. FERGUSON, INSPECTOR.							
1·0398	123·0	8·61	—0·5	None	Bulky ppte..	39623	Genuine.
1·0364	115·5	8·08	—0·4	"	" ..	39624	"
1·0390	126·0	8·82	0·0	Salicylic acid present.	" ..	39625	Genuine but contains a preservative.
1·0348	114·0	7·98	0·0	None.....	" ..	39626	Genuine.
1·0346	111·0	7·77	—0·5	"	" ..	39627	"
E. BELAND, INSPECTOR.							
1·0347	114·5	8·01	—0·1	None.....	Bulky ppte..	36692	Genuine.
1·0287	90·0	6·30	—0·2	"	"	36693	"
1·0296	93·5	6·54	—0·3	"	" ..	36694	"
1·1062	51·0	3·57	—27·8	Salicylic acid present.	Ppte. below normal.	36695	Rotation after inversion —27·8. Contains a yellow dye (small amount). Sold as a cordial.
1·0348	111·0	7·77	0·0	None.....	Bulky ppte..	36696	Genuine.

BOTTLED LIME

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Quantity.	Cost.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (is not an expression of opinion.)
			DISTRICT OF ST. HYACINTHE—				
1909.					$ c.		
Dec. 7	Bottled Lime Juice.	38884	Pharm. Larochelle, Sorel.	3 Bots	75	Nat. Drug & Chem. Co, Ltd, of Canada	'Sovereign' Brand.
" 10	" ..	38885	A. Foisy, St. Jean...	"	1.20	L. Chaput fils & Cie, Montreal.	'Montserrat.'.....
" 21	" ..	38886	A. H. Moore & Co., Magog.	"	75	Nat. Drug & Chem. Co, Ltd, of Canada	'Sovereign.'.....
" 21	" ..	38887	L. H. Oliver, Sherbrooke.	"	1.05	" ..	'Montserrat.'.....
" 23	" ..	38888	Thos. Hebert, St. Hyacinthe.	"	75	Robt. Simpson & Co., Montreal.	'Montebello.'.....
			DISTRICT OF MONTREAL—				
Dec. 3	Bottled Lime Juice.	40381	Jno. T. Lyons, Co. Incorp. 8 Bleury St., Montreal.	3 Bots	38	Riolleti & Co., St. Thomas.	Lime Juice Cordial
" 4	" ..	40382	St. Lawrence Grocery Co., 395 St. Lawrence B., Montreal.	"	75	T. A. Lyttle Co., Toronto.	'Sterling.'.....
" 4	" ..	40383	R. Blain, 8 Guilbault St., Montreal.	"	60	Sutcliffe & Bingham, Ltd., Manchester.	'K. Kovat.'.....
" 4	" ..	40384	Nat. Drug & Chem. Co., Ltd., 31 Gabriel St., Montreal.	"	65	Nat. Drug & Chem. Co., Ltd.	'Sovereign.'.....
" 4	" ..	40385	Lyman's, Ltd., St. Paul St., Montreal.	"	66	Lyman's, Ltd., Montreal.	Dominica.....
			DISTRICT OF OTTAWA—				
Dec. 6	Bottled Lime Juice.	42866	R. E. Powell, Ottawa.	3 Bots	75	T. A. Lyttle Co., Ltd., Toronto.	'Sterling.'.....
" 10	" ..	42867	Gloucester Trading Co., Ottawa.	"	1.05	H. N. Bate & Sons, Ottawa.	'Montserrat.'.....
" 10	" ..	42868	S. J. Major, Ltd., Ottawa.	"	25	Nat. Drug & Chem. Co., Ltd., Halifax.	Sovereign Lime Juice Cordial.
" 14	" ..	42869	C. A. Adams, Kemptville.	"	1.05	Turner & Co. Toronto.	Turner's Lime Fruit Juice.
" 17	" ..	42870	G. A. Aiken, Finch..	"	75	Fur. by T. W. Chamberlain, Prescott, Mfg. by Lyon Silverman, Montreal.	Labelled Lime Fruit Juice, full strength.
" 17	" ..	42894	P. Lamoureux, Ottawa.	"	75	Unknown.	'Sterling.'.....

SESSIONAL PAPER No. 14

JUICE—*Continued.*

Results of Analysis.						Number of Sample.	Remarks and Opinion of the Chief Analyst.
Specific Gravity at 15°C.	Acidity per 100 cc in terms of cc.N.	Per cent weight in Vol.-Acidity calculated as citric acid.	Rotation in 2 dm. tube.	Preservatives.	Reaction with alcohol (after evaporation to a Syrup.)		
J. C. ROULEAU, INSPECTOR.							
		p.c.					
1·0292	93·0	6·51	—0·2	None	Bulky ppte.	38884	Genuine.
1·0350	114·0	7·98	—0·4	"	" ..	38885	"
1·0276	87·5	6·12	—0·2	"	" ..	38886	"
1·0360	118·0	8 26	0·0	"	" ..	38887	"
1·0984	20·5	1·43	—27·5	Salicylic acid present.	Very slight ppte.	38888	Rotation after inversion —27·8. Contains considerable sugar. Sold as a cordial. Contains a preservative.
J. J. COSTIGAN, INSPECTOR.							
1·0168	100·0	7·00	0·0	None	Very slight ppte. after stirring.	40381	Contains 15·85 p.c. proof spirits. Sold as a cordial.
1·0175	60·5	4·23	+ 0·8	"	No ppte....	40382	Rotation after neutralizing +2·6. Contains a yellow aniline dye. Artificial and contains tartaric acid. Adulterated
1·1206	31 0	2·17	+23·0	Salicylic acid trace.	Bulky ppte.	40383	Invert rotation +22·4. Contains considerable glucose. Sold as a cordial. Contains glucose and a preservative.
1·0266	86·0	6·02	— 0·2	None	" ..	40384	Genuine.
1·0285	98 0	6·86	0·0	"	" ..	40385	"
J. A. RICKEY, INSPECTOR.							
1·0232	66·0	4·62	+ 3·5	None	Bulky ppte.	42866	Rotation after neutralizing +8·6. Contains a yellow aniline dye. Artificial and contains tartaric acid. Adulterated
1·0348	114 0	7·98	— 0·2	"	" ..	42867	Genuine.
1·2788	56·0	3·92	—77·6	"	" ..	42868	Rotation after inversion —76·4. Contains a large amount of sugar. Sold as a cordial.
1·0422	89·0	5·60	— 3·8	Salicylic acid present.	Slight ppte.	42869	Rotation after neutralization —0·2. Contains a yellow aniline dye and tartaric acid. Is artificial. Adulterated.
1·0185	61·0	4·27	+ 3·7	" ..	No ppte....	42870	Rotation after neutralizing +11·4. Contains a yellow aniline dye (strongly dyed) and tartaric acid. Is artificial. Adulterated.
1·0231	68 0	4·76	+ 3·9	None	" ..	42894	Rotation after neutralization +11 6. Contains a yellow aniline dye and tartaric acid. Is artificial. Adulterated.

BOTTLED LIME

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Quantity.	Cost.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
					$ c.		
DISTRICT OF KINGSTON—							
1909							
Nov. 29	Bottled Lime Juice.	42782	Nat. Drug Co., Kingston.	3 Bots	1.00	Evans Sons, Lescher & Webb, Liverpool & London.	
" 29	" ..	42783	A. P. Chown, Kingston.	"	75	Nat Drug Co.	
" 29	" ..	42784	C. S. Prouse, Kingston.	"	75	"	
" 29	" ..	42785	G. Mahood, Kingston	"	1.05	Batger & Co., London.	
" 29	" ..	42786	W. W. Gibson, Kingston.	"	75	Nat. Drug Co.	
DISTRICT OF TORONTO—							
Dec. 3	Bottled Lime Juice.	41441	H. G. Ainslie, Owen Sound.	3 bots.	0 60	The T. A. Lytle Co., Ltd., Toronto.	'Sterling'
" 7	" .	41442	J. S. O'Neal, Welland	" .	0 75	Alex. Riddle & Co., Ltd., London.	Stower's pure Lime Juice. Genuine as squeezed from the fruit.
" 16	" ..	41443	J. T. Festing, St. Catharines.	" .	0 25	T. A. Lytle & Co., Toronto.	'Sterling'
" 17	" ..	41444	W. J. O'Brien, Hamilton.	" .	0 30	Unknown.	
" 22	" ..	41445	M. Austin, Toronto Junction.	" .	0 45	Lyman Bros. & Co., Ltd., Toronto.	'Crown'
DISTRICT OF LONDON—							
Dec. 6	Bottled Lime Juice.	30871	R. Wiler & Co., Guelph	3 bots.	0 30	Simpson Bros., Guelph.	
" 7	" ..	30872	Jackson & Son, "	" .	0 75	Simpson Bros. & Co., Halifax.	
" 9	" ..	30883	Edward Flaherty, Stratford.	" .	0 75	Taylor & Pringle, Owen Sound.	
" 21	" ..	44709	W. R. Butcher, St. Mary's.	" .	0 30	Elliot, Mar & Co., London.	
1910. Jan. 5	" ..	44712	Jno. Levenston, Listowel.	" .	0 75	Nat. Drug Co., Toronto.	

SESSIONAL PAPER No. 14

JUICE—*Continued.*

Results of Analysis.						Number of Sample.	Remarks and Opinion of the Chief Analyst.
Specific Gravity at 15°C.	Acidity per 100 cc in terms of cc N.	Per cent weight in Vol.-Acidity calculated as citric acid.	Rotation in 2 dm. tube.	Preservatives.	Reaction with alcohol (after evaporation to a Syrup.)		
JAS. HOGAN, INSPECTOR.							
		p.c.					
1·0350	112·0	7·84	— 0·5	None	Bulky ppte.	42782	Genuine.
1·0344	111·0	7·77	0·0	Salicylic acid trace.	" ..	42783	Genuine with trace of a preservative.
1·0278	88·0	6·16	— 0·4	None	" ..	42784	Genuine.
1·2301	41·0	2·87	—67·8	Salicylic acid present.	Slight ppte.	42785	Contains a large amount of sugar. Invert rotation —70·0. Sold as a cordial. Contains a preservative.
1·0295	93·0	6·51	— 0·4	None	Bulky ppte.	42786	Genuine.
H. J. DAGER, INSPECTOR.							
1·0232	66·0	4·62	+3·6	None.....	Bulky ppte.	41441	Rotation after neutralizing +8·8. Artificial and contains tartaric acid. Adulterated.
1·0340	106·5	7·45	—0·3	Salicylic acid present.	" ..	41442	Genuine but contains a preservative.
1·0188	56·0	3·92	+3·3	None	No ppte....	41443	Rotation after neutralizing +10·0. Contains a yellow aniline dye and tartaric acid. Is artificial. Adulterated.
1·0316	100·0	7·00	0·0	Salicylic acid trace.	Bulky ppte.	41444	Genuine but contains a preservative.
1·0273	81·0	5·67	+0·5	Salicylic acid present.	" ..	41445	Abnormal and contains a preservative. Doubtful.
T. KIDD, INSPECTOR.							
1·0349	112·5	7·87	+0·7	Salicylic acid trace.	Bulky ppte.	30871	Abnormal rotation and contains a trace of a preservative.
1·2896	52·5	3·67	—85·4	None	Slight ppte.	30872	Contains a large amount of sugar. Invert rotation —90·8. Sold as a cordial.
1·0311	96·0	6·72	+6·2	"	No ppte....	30883	Rotation after neutralizing +17·8. Contains aniline dye and tartaric acid. Is artificial. Adulterated.
1·2351	62·0	4·34	—66·8	"	....	44709	Rotation after inversion —65·6. Contains a large amount of sugar. Sold as a cordial.
1·0262	83·5	5·84	—0·3	"	....	44712	Doubtful.

BOTTLED LIME

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Quantity.	Cost.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
					$ c.		
DISTRICT OF WINDSOR—							
1909							
Dec. 9	Bottled Lime Juice.	42683	J. T. Wallace, Brantford.	3 bots.	0 90	C. F. Sutton, Sons & Co., London, Eng.	....
" 10	" ..	42685	Ryan & Russell, London.	" .	0 75	T. A. Lytle Co., Toronto.	'Sterling .....
" 10	" ..	42688	Jno. Diprose, London	" .	1 05	Montserrat Co., Liverpool and London, Eng.	.....
" 10	" ..	42693	T. A. Rowat & Co., London.	" .	0 90	G. F. Sutton, Sons & Co., London, Eng.	.. ..
" 10	" ..	42694	A. McCormick & Son, London.	" .	0 45	T. A. Lytle & Co., Toronto.	Labelled 'Lime Fruit Juice.'
DISTRICT OF MANITOBA—							
Dec. 9	Bottled Lime Juice.	39831	C. Hoffman & Son, Winnipeg.	3 bots.	0 75	The Blackwoods, Ltd., Winnipeg.	Blackwood's Lime Fruit Juice.
" 10	" ..	39832	A. Hendry, Winnipeg	" .	0 75	Campbell Bros. & Wilson, Winnipeg and Calgary.	'Royal Shield' ....
" 10	" ..	39833	J. D. Slov, Winnipeg	" .	0 75	Unknown.	'Imperial' .....
" 13	" ..	39834	S. W. Elliott & Co., Winnipeg.	" .	0 75	The Blackwoods, Ltd., Winnipeg.	Blackwood's Lime Fruit Juice.
" 16	" ..	39835	P. Nelson, Winnipeg.	" .	0 50	Western Mfg. Co., Winnipeg.	'Maple Leaf'. ...
DISTRICT OF CALGARY—							
Dec. 14	Bottled Lime Juice.	43636	Bole Drug Co., Ltd., Calgary.	3 bots.	1 50	Nat. Drug & Chem. Co., Toronto.	....
" 14	" ..	43637	L. T. Mewburn & Co., Ltd., Calgary.	"	1 20	Montserrat Co., Island of Montserrat	.....
" 14	" ..	43638	Calgary Milling Co., Calgary.	"	1 50	The W. H. Malkin Co., Ltd., Vancouver.	. .....
" 14	" ..	43639	Calgary Wine & Spirit Co., Calgary.	"	0 75	Taylor & Pringle Co, Owen Sound.	....
" 14	" ..	43610	Campbell, Wilson & Horne Co., Ltd.	"	0 80	" "	.....

SESSIONAL PAPER No. 14

JUICE—*Continued.*

Results of Analysis.							
Specific Gravity at 15°C.	Acidity per 100 cc in terms of cc.N.	Per cent weight in Vol. Acidity calculated as citric acid.	Rotation in 2 dm. tube.	Preservatives.	Reaction with alcohol (after evaporation to a Syrup.)	Number of Sample.	Remarks and Opinion of the Chief Analyst.
		p. c.					
JNO. TALBOT, INSPECTOR.							
1·0306	86·5	6·05	—1·1	Salicylic acid trace.	Bulky ppte.	42683	Abnormal rotation and contains a trace of a preservative.
1·0150	58·5	4·08	+0·2	None	Slight ppte.	42685	Rotation after neutralizing +0·4. Contains a yellow aniline dye. Is artificial. Low in acidity and otherwise doubtful.
1·0365	116·5	8·15	—0·3	"	Bulky ppte.	42688	Genuine.
1·0287	90·5	6·33	—0·2	"	"	42693	Genuine.
1·0188	55·5	3·88	+3·2	"	Slight ppte.	42694	Rotation after neutralizing +9·0. Contains a yellow aniline dye and tartaric acid. Is artificial. Adulterated.
A. C. LARIVIERE, INSPECTOR.							
1·0308	91·0	6·37	+0·5	None	Bulky ppte.	39831	Genuine.
1·0236	74·5	5·21	+0·4	Salicylic acid present.	"	39832	Acidity low and contains a preservative. Doubtful.
1·0255	80·0	5·60	0·0	"	"	39833	Acidity low and contains a preservative.
1·0341	108·0	7·56	+0·5	Salicylic acid trace.	"	39834	Genuine, with a trace of preservative.
1·0313	107 5	7.52	0·0	Salicylic acid present.	ppte. below normal.	39835	Genuine but contains a preservative.
R. W. FLETCHER, INSPECTOR.							
1·0282	91 0	6·37	—0·1	None	Bulky ppte.	43636	Genuine.
1·0344	113·5	7·94	—0·3	"	"	43637	"
1·0333	108·5	7·59	—0 2	"	"	43638	"
1·0388	116·5	8·15	+7·5	"	No ppte.	43639	Rotation after neutralizing +21·0. Contains a yellow aniline dye and tartaric acid is artificial. Adulterated.
1·0282	84·0	5·88	+5·7	Salicylic acid present.	"	43640	Rotation after neutralizing +16·4. Contains a yellow aniline dye and tartaric acid is artificial. Adulterated.

BOTTLED LIME

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Quantity.	Cent.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
					$ c.		
DISTRICT OF VANCOUVER—							
1909.							
Dec. 13	Bottled Lime Juice.	37798	Kelly, Douglas & Co., Vancouver.	3 pts.	0 75	Vendors.....	'Nabob' Pure Lime Fruit Juice
" 13	" ..	37799	Hudson Bay Co., Vancouver.	"	1 05	Kops Breweries.....	Made from the finest Lime Juice. Special quality West India Lime Juice.
" 14	" ..	37800	W. H. Malkin Co., Ltd., Vancouver.	"	0 90	L. Rose & Co., Ltd..	Is entirely free from alcohol.
" 14	" ..	37801	W. J. McMillan & Co. Vancouver.	"	0 90	Albert Riddell & Co.	Prepar'd from their original Lime Juice Syrup Receipt. This cordial m'f'd. from pure juice of fruit free from alcohol.
" 14	" ..	37802	A. & C. Grocery.....	"	0 90	Nat. Drug Co., Vancouver.	'Sovereign'.....
DISTRICT OF VICTORIA—							
Dec. 10	Bottled Lime Juice.	41604	W. Speed..	3 bots.	0 75	Simon Leiser & Co., Ltd., Victoria, B.C.	'Royal' West India Lime Juice.
" 10	" ..	41605	The Saunders Grocery Co., Ltd.	"	1 20	Evans Sons, Lescher & Webb, Ltd., London, Eng.	Montserrat Lime Fruit Juice.
" 14	" ..	41606	Copas & Young.....	"	0 60	H. Moss, Victoria, B.C.	'Royal' West India Lime Juice.
" 14	" ..	41607	D. H. Ross & Co., Victoria, B.C.	"	0 75	Law, Young & Co., Montreal.	....
" 14	" ..	41608	R. Erskine & Co., Victoria, B.C.	"	0 75	The West India Lime Juice Co., St. Thomas, W.I.	Finest West India Lime Juice.

SESSIONAL PAPER No. 14

JUICE—*Concluded.*

Results of Analysis.						Number of Sample.	Remarks and Opinion of the Chief Analyst.
Specific Gravity at 15°C.	Acidity per 100 cc in terms of ccN.	Per cent weight in Vol.-Acidity calculated as citric acid.	Rotation in 2 drm. tube.	Preservatives.	Reaction with alcohol (after evaporating to a Symp.)		
J. F. POWER, INSPECTOR.							
		p. c.					
1·0359	117·0	8·19	—0·3	None	Bulky ppte..	37798	Genuine.
1·0336	108·0	7·56	0 0	"	" ..	37799	"
1·0236	80·5	5·63	+0·2	"	" .	37800	Low in acidity.
1·1392	37·5	2·72	—36·5	Salicylic acid present.	Slight ppte .	37801	Rotation after inversion —35·0. Contains considerable sugar. Sold as a cordial.
1·0350	112·0	7·84	+0·9	None	Bulky ppte .	37802	Abnormal rotation.
D. O'SULLIVAN, INSPECTOR.							
1·0300	100·0	7·00	+1·2	None	Bulky ppte..	41604	Rotation abnormal.
1·0345	111·0	7·77	0·3	"	" ..	41605	Genuine.
1·0288	96·5	6·75	+1·0	"	" ..	41606	Rotation abnormal.
1·0344	114·0	7·98	0·0	"	" ..	41607	Genuine.
1 0201	68·0	4·76	+0·5	Salicylic acid trace.	" ..	41608	Low in acidity, and contains a trace of preservative.

CORRECTION.

In Bulletin 184, p. 6, a sample of Ginger (No. 31480), sold by W. S. Brown, Charlottetown, P. E. I., and found to be adulterated, was stated by the vendor to have been furnished him by W. H. Schwartz & Sons, Halifax. The following statement, by the vendor, is now published, in justice to the firm named :—

Charlottetown, P. E. I.,

November 11, 1909.

Messrs. W. H. Schwartz & Sons,

Halifax, N. S.

Dear Sirs :—This is to certify that after thoroughly considering the matter as to whose Ginger I gave to Mr. Theo. Moore, the Inspector in Charlottetown, I am unable to prove that it was yours, having bought ginger from a wholesaler in Charlottetown on the 20th March, 1909.

Yours truly,

(Signed,) Walter S. Brown.

APPENDIX S.

BULLETIN No. 198—LEMON FLAVOURING EXTRACT.

OTTAWA, February 28, 1910.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I have the honour to present herewith a report upon seventy-five (75) samples, purchased throughout Canada in December last, as Lemon Flavouring Extract.

The last examination of this article was made in 1905, and is reported in Bulletin No. 114.

Lemon Extract is probably more largely used in the household than any other kindred preparation for the flavouring of pastry, &c. It is, of course, valued proportionately to its strength as a flavouring material, and to the quality of the flavour which gives it its name. No legalized standard for Lemon Extract exists in Canada; and in view of the large consumption of the article, it is of importance that it should be defined and legally recognized.

The results now placed in your hands, together with those published in Bulletin No. 114, will suffice to show the character of Lemon Extract as sold in Canada.

Both the British and the United States Pharmacopœias define a Tincture (or Spirit) of Lemon, and prescribe methods of preparation. Although it is not permissible to identify the Commercial Extract, as sold for flavouring purposes, with the pharmacopœial tinctures still, as these last are 'chiefly used to impart flavour to other medicines' (Squire's Companion, 18th Ed'n, p. 222), it seems reasonable to infer that the same methods of maufacture and the same properties possessed by the tinctures of pharmacy, which commend these last to the medical profession, should be imitated as far as possible by manufacturers of Commercial Extract.

The latest editions of both Pharmacopoeias contain revised formulas for preparation of Tinctura Limonis, as shown in the following table:—

TO MAKE 1,000 PARTS OF TINCTURE (SPIRIT) OF LEMON.

Materials from which made.	BRITISH PHARMACOPŒIA.		U.S. PHARMACOPŒIA.	
	Ed'n 1885.	Ed'n 1898.	Ed'n 1890.	Ed'n 1900.
Name of preparation.	Tincture.	Tincture.	Spirit.	Tincture.
Oil of lemon			50	
Fresh lemon peel	125	250	50	500
Strength of alcohol employed (Vol. p.c.)	57	90	95·1	94·9
Volume of product	1,000	1,000	1,000	1,000

It will be noted that lemon oil as such is no longer used in the manufacture of the tincture. The tinctures are made to contain large amounts of lemon peel extractive matter, both by using large amounts of peel, and by extracting this with strong alcohol, instead of with proof spirit, as directed in the British Pharmacopœia of 1885.

The following analytical results were obtained with tinctures made in the laboratory according to B. P. directions, as above given.

Mean result upon *Tinctura Limonis*, prepared according to B. P. directions, Ed'n 1898.

Specific gravity	0·8769
Rotation, 2 dm. at 20°C	+3°8
Equivalent Lemon Oil	1·2 p.c.
Alcohol (volume p. c.)	75·08

It will be noted that the water present in fresh lemon peel, freed as much as possible from the white, inner layer, reduces the alcohol strength from 90 per cent in the original solvent, to 75 per cent in the finished tincture; and that the lemon oil in the tincture averages only 1·2 per cent. The maximum content of oil found in any tincture made here from commercial lemons, was 1·4 per cent.

As a matter of interest I furnished samples of these tinctures to several persons, to be used as flavouring material, in order that their value for such purpose might be judged by actual baking tests. The unanimous opinion was that they were of good quality, as to flavour, but much weaker than the ordinary lemon extract of commerce. It appeared to be necessary to use from two to four times the volume usually employed, in order to get satisfactory results in intensity of flavour.

The United States standard for Lemon Extract is as follows:—'Lemon Extract is the flavouring extract prepared from oil of lemon, or from lemon peel, or both, and contains not less than five (5) per cent by volume of oil of lemon.'

'A flavouring Extract is a solution in ethyl alcohol of proper strength, of the sapid and odorous principles derived from an aromatic plant, or parts of the plant, with or without its colouring matter, and conforms in name to the plant used in its preparation.'

'Oil of lemon is the volatile oil obtained by expression or alcoholic solution, from the fresh peel of the lemon (Citrus limonum), has an optical rotation (25°C.) of not less than +60° in a 100 mm. tube, and contains not less than four (4) per cent by weight of citral.'

It would appear from the results upon Tincture of Lemon above quoted, that an extract of lemon, to contain five per cent of lemon oil, if prepared direct from the lemon peel with 90 per cent alcohol would require the employment of $\frac{5}{1\cdot2} \times 250 =$ 1,042 parts of lemon peel to prepare 1,000 parts of the finished product. This is more than twice the weight of peel prescribed by the U. S. Pharmacopœia (1900) for preparation of the tincture, and more than four times that required by the British Pharmacopœia. It is indeed doubtful whether an extract of the kind supposed, could be so prepared, because of the large amount of water present in the lemon peel. This would reduce the strength of alcohol, in the finished extract, to about 30 per cent, a strength insufficient to effect the complete extraction of the oil from lemon peel.

It is not, however, to the lemon oil as a whole, that the flavouring value of lemon extract is chiefly due, but to the citral (Geranial) that it contains. Lemon oil contains from 3 to 4 per cent of citral (Squire's Companion, 18th Ed'n, p. 723), so that an extract containing 5 per cent of the oil may contain about 0·2 per cent of citral. Citral is stated by Squire (Op. cit. p. 727) to possess about 15 times the flavouring power of lemon oil; and it is evident that citral is the really important component of Extract of Lemon, as used for flavouring purposes. The direct estimation of citral is apparently the true basis of valuation. It is unfortunate that methods applicable to the exact determination of citral in commercial extract of lemon are not available. Work is now being done with a view to the elaboration and perfecting of such methods.

Oil of Lemon Grass (Oleum Graminis Citrati) contains citral. As obtained from this source citral has a flavour quite different from that of the lemon, and resembling that of verbena. Lemon Grass citral is, nevertheless, employed as an adulterant of lemon oil (Squire's, Op. cit. p. 725), and is doubtless substituted for lemon citral, in the cheaper lemon extracts. The perfecting of a chemical method for direct determination of citral, would not serve to distinguish between citral from lemon and citral from lemon grass. It is, perhaps, to ensure the presence of a true lemon product, that the standard fixed by the United States requires the presence of 5 per cent of oil of lemons. Since, however, it is possible to substitute lemon grass citral in place of lemon citral, in lemon oil itself, the fact of the presence of lemon oil terpenes (which constitute over 90 per cent of lemon oil) is not a guarantee of the genuineness of the article.

It would seem that a useful assay of lemon extract involves (1) a determination of citral (2) an identification of the citral as that from lemons. Determinations of alcohol and of lemon oil are not sufficient to establish the genuineness or the value of a lemon extract for flavouring purposes. Strong alcohol is not needed to keep the citral in solution, and its employment merely adds to the cost of the article, without increasing its value to the consumer. It certainly enables a high percentage of lemon oil to be dissolved; but, as we have seen, it is not upon the terpenes of lemon oil that the flavouring value depends.

As in the case of many articles of food, which are valued chiefly for their flavour, bouquet or aroma, it must be granted that, in the present state of our knowledge, the trained palate or olfactory nerve of the expert is a surer guide than the analytical methods of the laboratory. Until we perfect a process for the determination of citral, and further devise a method of certainly distinguishing between the citral derived from lemons and that derived from lemon grass, we must depend upon the connoisseur in flavours to enable us to place, in proper order of value, the various lemon extracts of commerce. It is true that we can show (as is done in this, and previous reports) the content in alcohol, and in lemon oil; but a high strength in alcohol is only requisite to keep the oil in solution; and it is not upon the oil content that the value of the extract depends, but upon the amount of lemon citral present. This is so small that a very weak alcohol suffices to hold it in solution.

If the extract is made from fresh lemon peel, as directed by the pharmacopœias, in the preparation of tinctures, it is certainly necessary to employ strong alcohol, because the water in the peel reduces the strength of the alcohol proportionately to the amount of peel used; and we have seen that to obtain an extract of 5 per cent oil strength, we must employ an amount of peel at least equal to the weight of extract desired. But commercial extract of lemon is seldom or never made from the peel, but from the oil. Dilute alcohol is not further diluted in the operation of dissolving citral from the oil, as in the case of dissolving citral from the peel. Hence a comparatively weak alcohol, even below proof strength, is quite efficient; and while taking but small amounts of the terpenes into solution, effects a notable solution of citral, with the production of an extract which commands ready sale.

It is not even necessary that lemon oil should be employed in the manufacture of lemon flavouring extract. A very satisfactory extract can be made by the direct solution in alcohol of so-called, terpeneless oil of lemon. This is the residue from a fractional distillation of lemon oil, and contains the citral, normally belonging to the lemon oil. together with citronellal,and other components to which the flavour of lemon oil is due.

To sum up:—

1. Extract of lemon is valued for its characteristic flavour.
2. This flavour depends upon the presence of certain constituents of lemon oil.
3. The terpenes, which constitute more than 90 per cent of lemon oil, are not important from the point of view of contributing flavour to the oil.
4. It is mainly to dissolve the terpenes of lemon oil that strong alcohol is used as a solvent.
5. The citral, citronellal, and other flavour giving components of lemon oil, constitute less than 10 per cent of the oil, and may be effectively got into solution, from the oil, by weak alcohol.

6. If these flavouring components are derived immediately from fresh peel, a strong alcohol must be employed, on account of the water present in the peel. The alcohol content of the finished extract will, however, be low.
7. A good flavouring extract can be prepard either from fresh lemon peel, from lemon oil, or from so-called terpeneless lemon oil. It is according to commercial usage to prepare it from the lemon oil, rather than from the peel.
8. A weak alcohol (proof strength) suffices to dissolve the flavour giving constituents from the oil; and the employment of a stronger alcohol merely adds to the cost of the extract, without corresponding improvement of quality.
9. The citral of lemon-grass oil is not to be confounded with that from true lemon oil. Both citrals are more or less indefinite bodies, being essentially aldehydic, but associated with aromatic substances which are lemon-like in one case and more or less verbena-like in the other. The distinction between them is not, at present, evident, to chemical methods.
10. Methods for the quantitative determination of citral are being studied; and it is hoped that a practicable method may be discovered, thus enabling Lemon Extract to be judged by determination of the component to which it owes its commercial importance.

Of the 75 samples covered by the present report, only 13 contain above 1 per cent of lemon oil. These are as follows, and are arranged in order of their lemon oil content:—

No.		Lemon oil.	Alcohol.
39621	Baird's	7·6	89·72
38608	Dr. Scott, St. John, N.B.	7·0	88·72
39618	Nat. Drug & Chemical Co.	5·0	82·74
39829	Gold Standard Mfg.	4·4	80·94
43635	W. A. Georgeson Co., Calgary	3·6	90.32
38882	F. F. Dalley Co.	3·6	82·64
41753	F. F. Dalley Co.	3·2	80·40
42857	F. F. Dalley Co.	3·0	83·16
38881	F. F. Dalley Co.	2·8	71·48
40380	Henri Jonas Co.	2·1	71·78
39827	Campbell Bros. & Wilson	1·6	56·82
41755	Seeley	1·5	61·96
39830	White Star Mfg. Co	1·0	70·70

62 samples contain less than 1 per cent of lemon oil and 60 samples contain less than 0·5 per cent lemon oil. It is quite apparent that the appreciation given to Lemon Extract by consumers is dependent upon something else than its lemon oil content.

When considerable amounts of lemon oil are in solution, the alcoholic strength is necessarily high. The absence of terpenes makes it unnecessary to employ so strong an alcohol. Among the 62 samples containing less than 1 per cent of oil, some are very high in alcohol, and apparently to no purpose.

	Samples
From 80 to 90 per cent alcohol	4
" 70 " 80 "	3
" 60 " 70 "	1
" 50 " 60 "	5
" 40 " 50 "	14
" 30 " 40 "	8
" 20 " 30 "	24
" 10 " 20 "	3
	62

It thus appears that 49 samples, or 66 per cent of the total collection, are made with alcohol of less than proof strength; while 27 samples, or 36 per cent of the collection, contain alcohol of about half the strength of proof. Yet several of these appear to be very acceptable flavouring extracts.

I have the honor to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

BULLETIN No. 198—FLAVOURING EXTRACT OF LEMON.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis. Sp. Gr. of Sample.	Rotation in 2 dm. tube at 20° C.	Equivalent Lemon Oil —Vol.	Sp. Gr. of Oil-free distillate (Calculated).	Alcohol by Vol.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR.														
1909.										p. c.		p. c.		
Dec. 6	Flav. Extract of Lemon.	41751	Nat. Drug & Chem. Co., Halifax, N.S.	3 bots.	20	Vendors	'Soverign' brand	0·9173	+ 0·9	0·3	0·9199	57·00	41751	
" 7	" ..	41752	J. Frank Crowe & Co., Halifax, N.S.	3 " .	30	Imperial Extract Co., Toronto.	....	0·9680	+ 0·4	0·1	0·9683	27·62	41752	
" 7	" ..	41753	R. B. Seeton & Co., Halifax, N.S.	3 " .	50	F. F. Dalley Co., Hamilton.	....	0·8494	+10·5	3·2	0·8625	80·40	41753	
" 8	" ..	41754	E. B. Tracey, Halifax, N.S	3 " .	30	Imperial Extract Co., Toronto.	.....	0·9718	+ 0·7	0·2	0·9736	22·52	41754	
" 10	" ..	41755	Sumner & Cassidy, Truro, N.S.	3 " .	45	Seeley, Windsor, Ont.	.....	0·9022	+ 4·7	1·5	0·9087	61·96	41755	
DISTRICT OF PRINCE EDWARD ISLAND—THEO. MOORE, INSPECTOR.														
Dec. 6	Flav. Extract of Lemon.	38606	A. B. Paquet, Souris.	6 oz.	30	S. H. Ewing & Sons, Montreal.	'Club' soluble extract.	1·0034	+19·7	None.	0·9797	16·52	38606	Contains 5·4 p. c. cane sugar.
" 6	" ..	38607	L. McDonald, Souris.	6 " .	24	Unknown	Strongest essence of Lemon.	0·9584	+ 0·6	0·2	0·9612	33·60	38607	
" 6	" ..	38608	A. Currie & Co., Souris.	6 " .	75	Dr. Scott, St. John, N.B	Guaranteed free from all adulterations.	0·8261	+22·6	7·0	0·8381	88·72	38608	
" 7	" ..	38609	Mathew & McLean, Souris.	6 " .	48	Tropical Extract Co., Montreal.	Imperial flavouring extract.	0·9504	+ 0·7	0·2	0·9523	39·92	38609	
" 11	" ..	38610	Geo. Rackham, Charlottetown.	6 " .	54	Carvell Bros., Charlottetown.	McLaren's invincible extract true lemon	0·9405	+ 0·6	0·2	0·9417	46·20	38610	

DISTRICT OF NEW BRUNSWICK—JNO. C. FERGUSON, INSPECTOR.

Dec.	2	Flav. Extract of Lemon.	39618	Nat. Drug & Chem. Co. Ltd., St. John, N.B.	3 bots.	45	Vendors	'Star' brand. ..	0·8242	+17°·8	5 6	0·8333	90·20	39618
"	2	" ..	39619	Dearborn & Co., St. John, N.B.	3 " .	75	"	'Dearborn'brand	0·9461	+ 0·7	0·2	0·9477	42·58	39619
"	8	" ..	39620	G. E. Barbour Co. Ltd., St. John, N.B.	3 " .	60	"	... .	0·9309	+ 0 6	0·2	0·9312	51·72	39620
"	17	" ..	39621	The Baird Co. Ltd., Woodstock, N.B.	3 " .	25	"	Labelled Lemon Bairds super Extra, fruit flavouring extract.	0·8233	+23·4	7·6	0·8349	89 72	39621
1910. Jan.	6	" ..	39622	Geo. Stables, Newcastle, N.B.	3 " .	30	White Cross Mfg. Co., Toronto.	Pure lemon. White Cross Mfg. Co.	0·9749	+ 2 2	0·7	0 9772	19·08	39622

DISTRICT OF QUEBEC—E. BELAND, INSPECTOR.

Dec.	1	Flav. Extract of Lemon.	36687	Ludger Mignault, St. Anselme.	3 bots.	30	Dr. Ed. Morin, Quebec..	.....	0·9856	+ 0·6	0·2	0·9864	10·32	36687
"	1	" ..	36688	Alphonse Daimas, St. Anselme.	3 " .	30	Whitehead & Turner, Quebec.	.....	0·9624	+ 0·6	0·2	0·9643	31·16	36688
"	1	" ..	36689	J. M. Ouillet, St. Anselme.	3 " .	54	W. Brunet & Cie., Quebec	....	0·8738	+ 0·8	0·3	0·8743	76 08	36689
"	1	" ..	36690	Mad. Veave F. X. Guay, St. Anselme.	3 " .	45	Whitehead & Turner. Quebec.	....	0·9722	+ 0·5	0·1	0·9728	23·22	36690
"	1	" ..	36691	Charles Audet, St. Anselme.	3 " .	30	J. B. Reneaud & Cie, Quebec.	.....	0·9728	+ 0·4	0·1	0·9736	22 52	36691

DISTRICT OF ST. HYACINTHE—J. C. ROULEAU, INSPECTOR.

Dec.	6	Flav. Extract of Lemon.	38879	N. N. Boucher & Cie, La Baie	5 bots.	50	H. Jonas & Cie, Montreal	'Triple'.....	0·8770	+ 0·8	0·2	0·8794	74·16	38879
"	7	" ..	38880	P. Blain, Vercheres.	3 " .	30	Hudon & Orsali, Montreal.	'Signal'...	0 9746	+ 0·4	0·1	0·9760	20·24	38880
"	9	" ..	38881	J. A. Minard, Farnham.	3 " .	30	The F. F. Dalley Co., Ltd., Hamilton.	.....	0·8737	+ 8·8	2·8	0·8863	71·48	38881
"	20	" ..	38882	F. W. Gibson, Danville..	3 " .	60	" ..	....	0·8515	+11·4	3·6	0·8567	82·64	38882
"	21	" ..	38883	A. Hamel, Magog.....	3 " .	25	Mathewson's Sons, Montreal.	'M. Sons'.....	0·9666	+ 0·7	0·2	0·9668	28·92	38883

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Sp. Gr. of Sample.	Results of Analysis. Rotation in 2 dm. tube at 20° C.	Results of Analysis. Equivalent Lemon Oil—Vol.	Results of Analysis. Sp. Gr. of Oil-free distillate (Calculated).	Results of Analysis. Alcohol by Vol.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
										p. c.		p. c.		
DISTRICT OF MONTREAL—J. J. COSTIGAN, INSPECTOR.														
1909.														
Dec. 1	Flav. Extract of Lemon.	40376	The Brodie Mfg. Co., Montreal.	3 bots.	40	Vendors.....	.....	0·9623	+ 0·4	0·1	0·9647	30·80	40376	
" 1	" ..	40377	Pelletier et frere, 17 ChaboillezSquare, Montreal.	3 " .	30	.....	'Our Own' brand	0·9657	+ 0·7	0·2	0·9666	29·12	40377	
" 1	" ..	40378	James Duncan, Lachine, P.Q.	3 " .	25	.....	'Hercules' brand	0·9667	+10·0	0·3	0·9675	28·36	40378	
" 2	" ..	40379	Herron Leblanc Ltd., 573 St. Paul St., Montreal.	3 " .	40	Vendors....	'Crown' brand..	0·9417	+ 0·7	0·2	0·9424	45·74	40379	
" 2	" ..	40380	Henri Jonas & Co., Montreal.	3 " .	38	"	... .	0·8756	+ 7·2	2·1	0·8855	71·78	40380	
DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR.														
Dec. 3	Flav. Extract of Lemon.	42857	Walter Cunningham, Ottawa.	3 bots.	75	The F. F. Dalley Co., Ltd., Hamilton.	....	0·8497	+ 9·0	3·0	0·8552	83·16	42857	
" 3	" ..	42859	A. P. Johnson, Ottawa.	3 " .	30	H. N. Bate & Sons, Ottawa.	Labelled Our Soluble Extract Lemon Mfg. by I. E. Co., Toronto.	0·9688	+ 0·7	0·2	0·9693	26·68	42859	
" 11	" ..	43861	The City Grocery, Carleton Place.	3 " .	30	Unknown	Labelled Our Own Concentrated true fruit flavouring Extract.	0·9746	+ 0·7	0·2	0·9755	20·76	42861	
" 14	" ..	42863	The Anderson Langstaff Co. Ltd., Kemptville.	3 " .	30	Pure Gold Mfg. Co., Toronto.	'Eagle' brand quintessence.	0·9685	+ 0·4	0·1	0·9693	26·68	42863	

"	17	" ..	42865	Chester Casselman, Chesterville.	3 " .	30	The J. M. Lowes Co., Ltd., Toronto.	Labelled Our Own Concentrated pure fruit flav. ext. Lemon.	0·9759	+ 0·5	0·1	0·9753	20·94	42865		

DISTRICT OF KINGSTON—JAS. HOGAN, INSPECTOR.

Nov.	29	Flav. Extract of Lemon.	42777	A. P. Chown, Kingston..	6 oz..	35	Vendor..... ..	. .....	0·9152	+ 0·5	0·1	0·9172	58·27	42777		
"	29	" ..	42778	C. S. Prouse, Kingston..	6 " .	30	"	.. ..	0·8604	+ 0·8	0·2	0·8636	80·02	42778		
Dec.	1	" ..	42779	R. Templeton, Belleville.	6 " .	35	"	.....	0·9090	+ 0·4	0·1	0·9103	61·30	42779		
"	1	" ..	42780	W. H. A. Semple, Cobourg.	6 " .	40	"	.....	0·8749	+ 0·7	0·2	0·8781	74·68	42780		
"	1	" ..	42781	H. Mitchell, Port Hope..	6 " .	50	"	... .	0·8383	+ 1·0	0·3	0·8426	87·38	42781		

DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.

Dec.	17	Flav. Extract of Lemon.	41437	MacLaren's, Ltd., Hamilton.	3 bots.	17	Vendors.....	'Rosebud' brand extract concentrated lemon for flavouring.	0·9763	+ 0·4	0·1	0·9764	19·90	41437		
"	17	" ..	41438	The F. F. Dalley Co., Ltd., Hamilton.	3 " .	23	"	Labelled lemon prime extracts	0·9453	+ 0·5	0·1	0·9460	43·58	41438		
"	18	" ..	41439	J. L. Hewson, Oakville..	3 " .	30	Pure Gold Mfg. Co., Ltd., Toronto.	Labelled lemon flav. extract. 'Maple Leaf.'	0·9688	+ 0·7	0·2	0·9689	27·04	41439		
"	22	" ..	41440	White Swan Spices and Cereals, Ltd., Toronto.	3 " .	38	Vendors.....	Labelled lemon 'White Swan' flav. extract.	0·9446	+ 0·7	0·2	0·9463	43·38	41440		
"	23	" ..	41446	J. Wrigley, Toronto ...	3 " .	30	Imperial Extract Co., Toronto.	Our 1890 soluble extract lemon.	0·9678	+ 0·7	0·2	0·9685	27·42	41446		

DISTRICT OF LONDON—T. KIDD, INSPECTOR.

Dec.	6	Flav. Extract of Lemon.	30870	J. A. McCrea & Son....	3 bots.	30	H. P. Eckert & Co., Toronto.	.....	0·9718	+ 0·7	0·2	0·9717	24·44	30870		
"	10	" ..	30885	A. E. Robertson, Stratford.	3 " .	45	Vendor.....	.....	0·9188	+ 1·2	0·4	0·9216	56·26	30885		
"	10	" ..	30886	H. M. Myers, Stratford .	3 " .	45	"	... ...	0·9080	+ 0·9	0·3	0·9106	61·14	30886		
"	10	" ..	30889	Richard Smith, Seaforth.	3 " .	30	Imperial Extract Co., Toronto.	....	0·9678	+ 0·7	0·2	0·9679	27·98	30889		
"	21	" ..	44710	A. Beattie & Co., St. Mary's.	3 " .	30	" " ..	....	0·9672	+ 0·5	0·1	0·9682	27·62	44710		

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).	Sp. Gr. of Sample.	Results of Analysis. Rotation in 2 dm. tube at 20°C.	Equivalent Lemon Oil —Vol.	Sp. Gr. of Oil-free distillate (Calculated).	Alcohol by Vol.	No. of Sample.	Remarks and Opinion of the Chief Analyst.
DISTRICT OF WINDSOR—JNO. TALBOT, INSPECTOR.														
1909.										p. c.		p. c.		
Dec. 6	Flav. Extract of Lemon.	42658	F. L. Wagner, Aylmer, Ont.	3 bots.	30	Young & Winfield, Hamilton.	Favourite extract of lemon.	0·9688	+ 0·8	0·3	0·9691	26·86	42658	
" 7	" ..	42664	J. A. Trestrain, Tillsonburg.	3 " .	25	McLaren's, Hamilton....	'Thistle' brand extract.	0·9694	+ 0·9	0·3	0·9716	24 44	42664	
" 8	" ..	42668	Potts Clark Co., Simcoe.	3 " .	30	Eby Blain, Toronto.	....	0·9770	+ 0·8	0·3	0·9775	18·74	42668	
" 9	" ..	42677	Jas. Burns, Brantford...	3 " .	25	F. F. Dalley Co., Hamilton.	... .	0·9530	+ 0·7	0·2	0·9537	38·98	42677	
" 9	" ..	42678	Geo. J. Harp, Brantford.	3 " .	30	Gorman Eckert Co., London.	(Lemon) 'Jewel' flavouring extract.	0·9650	+ 0·6	0·2	0·9668	28·92	42678	
DISTRICT OF MANITOBA—A. C. LARIVIERE, INSPECTOR.														
Dec. 6	Flav. Extract of Lemon.	39826	Blue Ribbon Mfg. Co., Winnipeg.	3 bots.	50	Vendors	'Blue Ribbon' extract.	0·9398	+ 0·5	0·1	0·9403	46·96	39826	
" 6	" ..	39827	Campbell Bros. & Wilson, Winnipeg.	3 " .	35	"	'Royal Shield' extract.	0 9092	+38°9	1·6	0·8868	71·26	39827	Contains 8·54 p. c. cane sugar
" 7	" .	39828	The Dyson Co., Winnipeg.	3 " .	60	"	'Red Cross' extract.	0·9463	+ 0·9	0·3	0·9473	42·78	39828	
" 7	" ..	39829	Gold Standard Mfg. Co., Winnipeg.	3 " .	45	"	'Gold Standard' extract.	0·8569	+11·1	4·4	0·8612	80·94	39829	
" 7	" ..	39830	The White Star Mfg. Co., Winnipeg.	3 " .	45	"	'White Star' extract.	0·8558	+ 3·4	1·0	0·8882	70·70	39830	

DISTRICT OF CALGARY—R. W. FLETCHER, INSPECTOR.

Dec.	10	Flav. Extract of Lemon.	43631	L. B. Cochrane, Medicine Hat.	3 bots.	75	Gold Standard Mfg. Co., Winnipeg.	.....	0·8575	+ 0·7	0·2	0·8586	81·90	43631		
"	10	" ..	43632	H. H. Ireland, Medicine Hat.	3 " .	105	McLaren's, Ltd., Hamilton.	.....	0 9428	+ 0·8	0 3	0·9438	44·92	43632		
"	10	" ..	43633	R. Dunn, Medicine Hat.	3 " .	75	Gold Standard Mfg. Co., Winnipeg.	.. ..	0·8517	+ 0·6	0 2	0·8538	83·68	43633		
"	17	" ..	43634	Copas & Emerson, Calgary.	3 " .	75	G. F. Sutton Sons Co., London, Eng.	....	0·9442	+ 0·5	0·1	0·9470	42·98	43634		
"	17	" ..	43635	W. A. Georgeson & Co., Ltd., Calgary.	3 " .	75	Vendors.....	....	0·8271	+11·4	3·6	0·8329	90·32	43635		

DISTRICT OF VANCOUVER—J. F. POWER, INSPECTOR.

Dec.	9	Flav. Extract of Lemon	37793	Larsen & Anne.....	3 bots.	75	Empress Mfg. Co.	.....	0·9552	+ 0·4	0 1	0·9560	37·36	37793		
"	9	" ..	37794	C.E.Hoffard, New Westminster.	3 " .	60	Sherriffs Co.....	....	0·9391	+ 0·4	0 1	0·9403	46·96	37794		
"	10	" ..	37795	W. Hetherington, Vancouver.	3 " .	75	McLaren & Co....	McLaren's Invincible extract	0 9419	+ 0·4	0 1	0·9420	46·02	37795		
"	13	" ..	37796	R. Ackerman, Vancouver	3 " .	60	Pure Fruit Extract Co..	Pure fruit extract.	0·9853	+ 0·7	0·2	0·9856	11·10	37796		
"	13	" ..	37797	T. Russell, Vancouver...	3 " .	75	Kelly Douglas Co., Vancouver, B.C.	'Nabob' brand..	0·9460	+ 0 5	0·1	0·9463	43·38	37797		

DISTRICT OF VICTORIA—D. O'SULLIVAN, INSPECTOR.

Dec.	10	Flav. Extract of Lemon.	41599	Windsor Grocery Co....	3 bots.	75	Sherriffs, Toronto.....	Sherriffs Imperial quintessence of true lemon.	0·9407	+ 0·7	0·2	0·9441	44·72	41599		
"	10	" ..	41600	W. Speed.....	3 " .	60	Empress Mfg. Co., Vancouver, B.C.	'Empress' brand	0·9535	+ 0·4	0·1	0·9551	37·96	41600		
"	10	" ..	41601	Saunders Grocery Co., Ltd.	3 " .	75	Pure Gold Mfg. Co., Toronto.	Pure Gold flavouring extracts	0·9378	+ 0·5	0·1	0·9411	46 56	41601		
"	14	" ..	41602	R. Erskine & Co	3 " .	75	Pioneer Coffee and Spice Mills, Victoria, B.C.	'Star brand'. . .	1.0119	+4° ·9	0·0	0·9718	24·26	41602	Contains cane sugar	
"	15	" ..	41603	W. A. Jameson Coffee Co.	3 " .	60	W. A. Jameson Coffee Co., Victoria, B.C.	Nector flavouring extract.	0·9555	+ 0·9	0·3	0·9570	36·72	41603		

APPENDIX T.

BULLETIN No. 199—FRIAR'S BALSAM, (COMPOUND TINCTURE OF BENZOIN.)

OTTAWA, March 8, 1910.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I have the honour to submit herewith the results of analysis of 70 samples of Friar's Balsam (Tinctura Benzoini Composita), collected throughout Canada in September and October of last year.

This tincture is very largely used as a remedy in bronchitis and is official in most pharmacopœias.

The composition of the Compound Tincture of Benzoin is nearly identical for the British and the United States Pharmacopœias, as follows :—

TO MAKE 1000 PARTS.

Materials from which made.	B. P.	U. S. P.
Benzoin	100	100
Aloes	18·2	20
Storax	75	80
Balsam of Tolu	25	40
Alcohol	q. s.	q. s.
	1000	1000

The tests prescribed by the British Pharmacopœia are :—

1. Specific gravity, about 0·900.
2. Total solids, 17 to 18 per cent.
3. Absolute alcohol, about 75 p.c.

Tinctures made in the laboratory according to B. P. directions gave results as follows :—

	Days.	Days.
Time of maceration	2	3½
Specific gravity	0·8981	0·8924
Total dry solids	14·6	15·4
Alcohol (vol. p. c.)	74·32	74·96

The fact that different varieties of benzoin have different solubilities may to some extent account for the varying solids found in the tinctures herein reported. It will be noted that even the tinctures made in this laboratory did not yield the amount of dry solids required (17–18 p.c.), and 17 p.c. is only reached by 7 samples out of 70 examined. Solids vary from 8·6 to 19 46 per cent, five (5) samples containing less than 10 per cent.

The alcohol used is generally of proper strength ; and is genuine in 69 samples. One sample (No. 1255) is made with methyl alcohol, and is therefore adulterated.

This report shows Friar's Balsam as dispensed in Canada, to be generally somewhat below the pharmacopœial standard in dissolved solids.

I beg to recommend the publication of this report as Bulletin No. 199.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Results of Analysis. Sp. Gr. of Sample at 15·6.	Sp. Gr. of Distillate to equal Volume.	Alcohol. Weight.	Alcohol. Volume.	Alcohol. Proof Spirit.	Total Solids grams per 100cc.	Examination for Methyl Alcohol. Density.	Alcohol by Weight.	Refraction. Theory.	Refraction. Found.	Refraction. Difference	No. of Sample.
DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR.																		
1909.									p. c.	p. c.	p. c.	p. c.		p. c.				
Oct. 8	Friars Balsam.	41846	G. C. McDougall, Kentville, N.S.	6 oz.	90	Vendor	0·8707	0·8492	79·64	85·19	149·27	11·77	0·9616	27·50	64·6	64·4	− 0·2	41846
„ 8	„	41847	H. E. Wilson, Windsor, N.S.	6 „	60	„	0·8718	0·8514	78·76	84·47	148·03	13·61	0·9596	28·81	66·8	66·5	− 0·3	41847
„ 11	„	41848	A. J. Crease, Amherst, N.S.	6 „	60	„	0·8880	0·8701	70·80	77·60	136·00	17·61	0·9614	27·64	64·8	64·6	− 0·2	41848
„ 11	„	41849	R. C. Fuller & Co., Amherst, N.S.	6 „	50	Vendors	0·8739	0·8531	78·08	83·91	147·05	13·34	0·9514	33·82	74·1	73·8	− 0·3	41849
„ 12	„	41850	Crowe Bros., Truro, N.S.	6 „	55	„	0·8869	0·8649	73·08	77·61	139·52	14·40	0·9651	25·07	60·4	60·1	− 0·3	41850
DISTRICT OF NEW BRUNSWICK—J. C. FERGUSON, INSPECTOR.																		
Sept. 9	Friars Balsam.	39583	The Nat. Drug and Chem. Co., Ltd., St. John, N.B.	6 oz.	60	Vendors	0·8784	0·8647	73·08	79·61	139·52	12·81	0·9707	20·75	51·9	51·9	0·0	39583
„ 15	„	39584	P. J. Donohoe, St. John, N.B.	6 „	60	Vendor	0·8830	0·8701	70·80	77·60	136·00	14·88	0·9745	17·67	45·8	45·9	+ 0·1	39584
„ 21	„	39585	R. T. Mack, Fredericton, N.B.	6 „	60	„	0·8799	0·8556	77·04	83·04	145·52	15·29	0·9663	24·15	58·4	58·2	− 0·2	39585
Oct. 6	„	39586	Fairweather Bros. Estate, Moncton, N.B.	6 „	60	Vendors	0·8913	0·8593	75·45	81·68	143·14	16·24	0·9617	27·43	64·4	64·2	− 0·2	39586
„ 11	„	39587	A. W. G. McDonald, Campbellton, N.B.	6 „	40	Davis Lawrence Co., Montreal.	0·8879	0·8701	70·80	77·60	136·00	10·06	0·9652	25·00	60·1	60·2	+ 0·1	39587

DISTRICT OF QUEBEC—E. BELAND, INSPECTOR.

Sept.	13	Friars Balsam.	36652	Dr. J. L. L. Hamelin, Louiseville.	6 oz..	60	Lyman Sons, Montreal.	0·9065	0·8806	66·43	73·69	129·15	16·74	0·9641	25·79	61·5	61·5	0·0	36652
"	13	" ..	36653	L. A. Plante, Louiseville.	6 " ..	60	Nat. Drug Co., Montreal.	0·8818	0·8701	70·80	77·60	136·00	11·57	0·9706	20·83	52·0	51·6	− 0·4	36653
"	14	" ..	36654	J. A. Peltier, Trois Rivière.	6 " ..	60	Lymans, Ltd., Montreal.	0·8819	0·8683	71·54	78·25	137·14	11·57	0·9942	17·92	46·3	46·6	+ 0·3	36654
"	14	" .	36655	R. W. William, Trois Rivière.	6 " ..	45	" ..	0·8651	0·8445	81·56	86·77	152·06	10·28	0·9705	20·92	52·3	52·6	+ 0·3	36655
"	14	" ..	36656	Pharmacie Normand, Trois Rivière.	6 " ..	50	Lyman Knox, Montreal.	0·8986	0·8790	67·13	74·33	130·26	16·70	0·9645	25·50	61·0	61·3	+ 0·3	36656

DISTRICT OF ST. HYACINTHE—J. C. ROULEAU, INSPECTOR.

Sept.	15	Friars Balsam.	1251	P. A. Berard, Drummondville.	6 oz..	75	Unknown.....	0·9092	0·8822	65·75	73·07	128·05	19·02	0·9738	18·23	47·0	47·4	+ 0·4	1251
"	16	" ..	1252	J. B. Leduc, Marieville.	6 " ..	70	Lyman Knox Co., Montreal.	0·8969	0·8806	66·43	73·69	129·15	14·61	0·9597	28·75	66·8	66·7	− 0·1	1252
"	17	" ..	1253	Dr. Guy, St. Jean ..	" ..	60	Vendor.....	0·8909	0·8666	72·26	78·89	138·25	17·97	0·9706	20·83	52·4	52·6	+ 0·2	1253
"	22	" ..	1254	Dr. Lambly, Cookshire.	6 " ..	75	Lymans, Ltd.. Montreal.	0·8991	0·8739	69·33	76·31	133·72	18·29	0·9605	28·25	65·9	65·5	− 0·4	1254
"	23	" ..	1255	Magog Pharmacy, Magog.	6 " ..	50	Unknown..... ...	0·8687	0·8384	83·92	88·64	155·34	12·56	0·9592	29·07	67·3	40·5	− 26·8	*1255

DISTRICT OF MONTREAL—J. J. COSTIGAN, INSPECTOR.

Sept.	9	Friars Balsam.	40306	A. Monat, 20 St. Catherine W., Montreal.	6 oz..	40	....	0·9000	0·8806	66·43	73·69	129·15	15·53	0·9754	16·92	44·3	44·4	+ 0·1	40306
"	9	" .	40307	J. T. Lyons Co., suc., 577 St. Catherine W., Montreal.	6 " ..	50	.....	0·8730	0·8611	74·64	80·96	141·89	12·03	0·9728	19·00	48·5	48·6	+ 0·1	40307
"	9	" ..	40308	A. B. Scarff, 703 St. Catherine W., Montreal.	6 " ..	65	Lyman Knox Co., Ltd.	0·9006	0·8823	65·71	73·03	127·99	15·35	0·9757	16·69	43·9	44·1	+ 0·2	40308
"	9	" ..	40309	C. T. Milne, 721 St. Catherine W., Montreal.	6 " ..	50	. .. .	0·9015	0·8823	65·71	73·03	127·99	15·21	0·9751	17·17	44·8	45·0	+ 0·2	40309
"	9	" ..	40310	O. Brault, 248 St. Antoine St., Montreal.	6 " ..	50	.....	0·8968	0·8701	70·80	77·60	136·00	14·43	0·9622	27·07	63·8	63·8	0·0	40310

* Contains wood Alcohol—Adulterated.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Results of Analysis. Sp. Gr. of Sample at 15·6.	Sp. Gr. of distillate to equal Vol.	Alcohol. Weight.	Alcohol. Volume.	Alcohol. Proof Spirit.	Total Solids grams per 100cc.	Examination for Methyl Alcohol. Density.	Alcohol by Weight.	Refraction. Theory.	Refraction. Found.	Refraction. Difference	No. of Sample.
DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR.																		
1909.									p. c.	p. c.	p. c.	p. c.		p. c.				
Sept. 22	Friars Balsam.	42831	E. H. Elvidge, Vankleek Hill.	6 oz.	70	Lymans, Ltd., Montreal.	0·8562	0·8398	83·38	88·22	154·60	9·40	0·9622	27·07	63·8	61·0	+ 0·2	42831
" 25	" ..	42832	W. S. Robertson, Perth.	6 " .	60	Vendor	0·8752	0·8536	77·88	83·74	146·75	13·87	0·9584	29·60	68·2	67·8	− 0·4	42832
" 29	" ..	42833	John McLeister, Alexandria.	6 " ..	60	Lymans, Ltd., Montreal.	0·8911	0·8593	75·45	81·68	143·14	14·05	0·9631	26·47	62·7	62·4	− 0·3	42833
Oct. 5	" ..	42834	R. M. Arbuthnot, Ottawa.	6 " ..	75	Nat. Drug Co., Ottawa.	0·8941	0·8701	70·80	77·60	136·00	13·78	0·9730	18·85	48·2	48·2	0·0	42834
" 5	" ..	42835	Beattie & Argue, Ottawa.	6 " ..	75	Vendors.....	0·8772	0·8556	77·04	83·04	145·52	15·96	0·9609	28·00	65·5	65·1	− 0·4	42835
DISTRICT OF KINGSTON—JAS. HOGAN, INSPECTOR.																		
Sept. 7	Friars Balsam.	42746	National Drug Co., Kingston.	6 oz.	50	Vendors.....	0·8735	0·8720	70·04	76·94	134·84	14·47	0·9661	24·31	58·8	58·6	− 0·2	42746
" 8	" ..	42747	D. M. Waters, Belleville.	6 " ..	50	Vendor	0·8830	0·8611	74·64	80·96	141·89	15·16	0·9598	28·69	66·3	66·4	+ 0·1	42747
" 8	" ..	42748	O. G. John's, Cobourg.	6 " ..	50	"	0·8772	0·8536	77·88	83·74	146·75	14·24	0·9594	28·94	66·6	66·8	+ 0·2	42748
" 8	" ..	42749	A. J. Gould, Cobourg	6 " ..	50	"	0·8643	0·8452	81·28	86·54	151·66	11·25	0·9555	31·31	70·8	70·5	− 0·3	42749
" 9	" ..	42751	E. S. Payne, Peterboro.	6 " ..	50	"	0·8741	0·8574	76·29	82·40	141·11	11·70	0·9750	17·25	45·0	41·8	− 0·2	42751

DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.

Sept.	23	Friars Balsam.	41392	Hawkins Ltd., Hamilton.	6 oz.	30	.....	0·8703	0·8492	79·64	85·19	149·27	13·05	0·9617	27·43	64·4	64·2	− 0·2	41392
"	23	" ..	41393	Littlewoods Pharmacy, Hamilton.	6 " ..	50	Burroughs, Wellcome & Co., London, Eng.	0·8818	0·8773	67·83	74·97	131·38	16·59	0·9774	15·33	41·2	41·3	+ 0·1	41393
"	24	" ..	41394	W. H. Cummins, Dundas.	6 " ..	25	The Dom. Drug Co., Ltd., Hamilton.	0·8801	0·8556	77·04	83·04	145·52	15·81	0·9626	26·80	63·3	63·1	− 0·2	41394
"	25	" ..	41395	G. Tamblyer, Toronto.	6 " ..	50	Lyman Bros. Co., Ltd., Toronto.	0·8907	0·8666	72·26	78·89	138·25	15·39	0·9628	26·67	63·1	62·8	− 0·3	41395
"	27	" ..	41396	W. H. Worden, Toronto.	6 " ..	50	The Nat. Drug & Chem. Co., Ltd., Toronto.	0·8805	0·8630	73·79	80·22	140·59	13·79	0·9564	30·78	70·0	69·9	− 0·1	41396

DISTRICT OF LONDON—T. KIDD, INSPECTOR.

Sept.	13	Friars Balsam.	30818	W. A. McIntye, St. Marys.	6 oz..	60	Vendor..	0·8751	0·8593	75·45	81·68	143·14	12·98	0·9709	20·58	51·6	51·7	+ 0·1	30818
"	14	" ..	30826	H. M. Myers, Stratford.	6 " ..	60	"	0·8941	0·8720	70·04	76·94	134·84	14·14	0·9728	19·00	48·5	48·2	− 0·3	30826
"	21	" ..	30850	Dunlop, Goderich...	6 " ..	60	J. Winer & Co., Hamilton.	0·9103	0·8841	64·96	72·34	126·78	16·24	0·9745	17·67	45·8	45·4	− 0·4	30850
"	22	" ..	30861	Walter McKibbon, Wingham.	6 " ..	60	Nat. Drug & Chem. Co., Hamilton.	0·9042	0·8805	66·48	73·73	129·22	16·32	0·9736	18·38	47·3	47·3	0·0	30861
"	27	" ..	30864	A. Steward, Guelph.	6 " ..	50	Vendor.....	0·8816	0·8556	77·04	83·04	145·52	16·19	0·9623	27·00	63·7	63·6	− 0·1	30864

DISTRICT OF WINDSOR—JNO. TALBOT, INSPECTOR.

Oct.	4	Friars Balsam.	42609	C. H. Gunn & Co., Chatham.	6 oz..	50	Vendors..	0·9003	0·8756	68·54	75·60	132·49	19·46	0·9737	18·31	47·1	46·8	− 0·3	42609
"	4	" ..	42610	A. J. McCall & Co., Chatham.	6 " ..	60	"	0·8767	0·8611	74·64	80·96	141·89	10·52	0·9733	18·63	47·7	47·5	− 0·2	42610
"	5	" ..	42622	H. O. Fleming, Windsor.	6 " ..	75	Vendor.	0·8928	0·8683	71·54	78·25	137·14	16·44	0·9744	17·75	46·0	46·2	+ 0·2	42622
"	7	" ..	42639	L. A. Willoughby, Leamington.	6 " ..	75	"	0·8750	0·8536	77·88	83·74	146·75	14·23	0·9681	22·77	55·7	55·9	+ 0·2	42639
"	8	" ..	42641	U. M. Mitton, Ridgetown.	6 " ..	60	"	0·8514	0·8384	83·92	88·64	155·34	8·60	0·9599	28·62	66·6	66·7	+ 0·1	42641

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Results of Analysis. Sp. Gr. of Sample at 15·6.	Sp. Gr. of distillate to equal Volume.	Alcohol. Weight.	Alcohol. Volume.	Alcohol. Proof Spirit.	Total Solid grams per 100 cc.	Examination for Methyl Alcohol. Density.	Alcohol by Weight.	Refraction. Theory.	Refraction. Found.	Refraction. Difference	No. of Sample.
DISTRICT OF MANITOBA—A. C. LARIVIERE, INSPECTOR.																		
1909.									p.c.	p.c.	p.c.		p.c					
Sept. 14	Friars Balsam.	39796	Gillespie & Campbell, Winnipeg.	6 oz.	50	Unknown.....	0·8794	0·8574	76·29	82·40	144·41	12·35	0·9682	22·69	55·6	55·5	- 0·1	39796
" 14	"	39797	Colcleugh & Co., Winnipeg.	6 "	30	"	0·8864	0·8683	71·54	78·25	137·14	15·12	0·9720	19·67	49·8	50·3	+ 0·5	39797
" 11	"	39798	D. W. Bradshaw, Winnipeg.	6 "	60	Vendor.....	0·8875	0·8630	73·79	80·22	140·59	14·63	0·9621	27·14	63·9	63·6	- 0·3	39798
" 22	"	39799	Geo. McCullough, Brandon.	6 "	65	Unknown.....	0·8861	0·8611	74·64	80·96	141·89	16·99	0·9700	21·31	52·9	52·7	- 0·2	39799
" 21	"	39800	R. T. Hoskin, Winnipeg.	6 "	60	Vendor.....	0·8757	0·8536	77·88	83·74	146·75	13·24	0·9670	23·62	57·4	57·6	+ 0·2	39800
DISTRICT OF CALGARY—R. W. FLETCHER, INSPECTOR.																		
Sept. 10	Friars Balsam.	35632	J. J. Johnston, Lethbridge.	6 oz.	75	H. K. Wampole & Co., Perth.	0·8877	0·8574	76·29	82·40	144·41	15·88	0·9594	28·94	67·1	66·7	- 0·4	35632
" 10	"	35633	E. M. Cawker, Med. Hat.	6 "	75	Parke Davis Co., Walkerville.	0·8871	0·8611	74·64	80·96	141·89	15·78	0·9623	27·00	63·7	63·4	- 0·3	35633
" 10	"	35634	C. S. Pringle, Med. Hat.	6 "	75	"	0·8766	0·8650	72·96	79·50	139·32	10·98	0·9733	18·62	47·7	47·8	+ 0·1	35634
" 14	"	35635	Curry & Cope, Calgary.	6 "	75	"	0·8785	0·8611	74·64	80·96	141·89	13·62	0·9758	16·62	43·7	44·0	+ 0·3	35635
" 14	"	35636	W. McLean, Calgary	6 "	75	"	0·8801	0·8701	70·80	77·60	136·00	15·05	0·9728	19·00	48·5	48·4	- 0·1	35636

DISTRICT OF VANCOUVER—J. F. POWER, INSPECTOR.

Sept.	21	Friars Balsam.	37758	Woodwards Dept. Store, Vancouver.	6 oz.	75	Vendor	0·8770	0·8514	78·76	84·47	148·03	13·53	0·9615	27·57	64·7	61·4	0·3	37758
"	21	"	37759	E. S. Knowlton, Vancouver.	6 "	75	Henderson Bros., Vancouver.	0·8796	0·8536	77·88	83·74	146·75	15·68	0·9665	24·00	58·2	58·0	0·2	37759
"	21	"	37760	Central Drug Store, Vancouver.	6 "	75	Nat. Drug & Chem. Co.	0·8798	0·8630	73·79	80·22	140·59	14·70	0·9723	19·42	49·4	49·2	− 0·2	37760
"	21	"	37761	Woods Pharmacy, Vancouver.	6 "	75	Henderson Bros., Vancouver.	0·9024	0·8756	68·54	75·60	132·49	18·48	0·9796	13·46	37·7	37·9	+ 0·2	37761
"	21	"	37762	McDuffee Bros., Vancouver.	6 "	75	Vendors	0·8819	0·8668	72·17	78·81	138·11	15·00	0·9766	16·00	42·5	42·7	+ 0·2	37762

DISTRICT OF VICTORIA—D. O'SULLIVAN, INSPECTOR.

Oct.	18	Friars Balsam.	41579	Wm. Jackson & Co., Victoria.	6 oz.	60	Lymans Ltd., Montreal.	0·8817	0·8701	70·80	77·60	136·00	11·42	0·9787	14·80	39·0	38·9	0·1	41579
"	18	"	41580	Hall & Co., Victoria.	6 "	75	Vendors	0·8930	0·8701	70·80	77·60	136·00	18·48	0·9746	17·58	45·7	46·2	+ 0·5	41580
"	18	"	41581	W. S. Terry, Victoria.	6 "	75	Parke Davis Co., Walkerville.	0·8893	0·8857	64·26	71·70	125·65	14·08	0·9732	18·69	47·9	48·0	+ 0·1	41581
"	18	"	41582	F. J. Williams, Victoria.	6 "	75	Vendor	0·8679	0·8574	76·29	82·40	141·41	9·65	0·9716	20·00	50·5	50·4	− 0·1	41582
"	18	"	41583	Geo. A. Fraser, Victoria.	6 "	75	Henderson Bros., Victoria, B.C.	0·8629	0·8473	80·42	85·84	150·43	9·70	0·9723	19·42	49·3	49·2	− 0·1	41583

APPENDIX U.

BULLETIN No. 200—HIGHLY COLOURED CONFECTIONERY.

OTTAWA, March 9, 1910.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I beg to hand you a report upon 149 samples of candy, purchased throughout Canada, in December last. This inspection, like that reported in Bulletin No. 112 (Nov. 1905), has had special reference to the freedom of the colouring matter used in dyeing candies, from metallic impurity, and in particular from arsenic. It is gratifying to find that only a single sample gave any reaction for arsenic, and this a quite negligible trace, entirely harmless.

Inspectors were instructed to procure highly coloured confectionery, since the character of the colouring material was a main object of research. In most cases the instructions were well carried out, and these results may be interpreted to mean that harmless dyes only are employed by Canadian candy manufacturers.

Several samples were dirty and fly-specked, evidently having been exposed, in the shop. It may not be out of place to emphasize the importance of keeping candy in glass, or other close receptacles. It is not enough that a piece of muslin or gauze should be spread over the candy. This is no protection against dust, and in most cases, none against flies.

Incidentally, the nature of the sugar is reported, and it will be seen that the cheaper grades of candy, represented by this collection, contain from 50 to 70 per cent of cane sugar for the softer varieties, and from 70 to 85 per cent for the harder kinds. The other ingredients are of harmless character.

I beg to recommend the publicatien of this report as Bulletin No. 200.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report (Is not an expression of opinion).	Results of Analysis. Moisture.	Sugar—Calculated to percentage on dry Substance. Polarization of half normal Sol. in 2 dm. tube. Direct.	Invert.	Cane Sugar by Clerget Formula	Arsenic.	Description.	No. of Sample.
DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR.														
1909.								p. c.			p. c.			
Dec. 6	Highly Coloured Confectionery.	41741	Moirs, Ltd., Halifax, N.S.	2 lbs.	20	Vendors.....	Assorted jellies..	7·30	+66·1	+30·6	53·0	None.	Gum drops, gelatinized starch.	41741
" 6	" ..	41742	" ..	2 " ..	20	"	Humbugs.....	2·86	+59·0	+ 5·4	81·9	"	Peppermint flavour, mixed colours.	41742
" 6	" ..	41743	" ..	2 " ..	40	"	Clear toys.....	3·16	+42·8	-16·1	87·9	"	Clear red.....	41743
" 6	" ..	41744	G. J. Hamilton, Halifax, N.S.	2 " ..	15	Vendor	Juvenile mixture..	3·42	+41·7	-14·1	83·3	"	Mixture	41744
" 7	" ..	41745	E. P. Charleton's 5, 10 & 15 cent Store, Halifax, N.S.	2 " ..	40	Wm. Patterson Son & Co., Brantford, Ont.	Pickling pears	2·52	+64·6	+19·8	66·7	"	Contain gelatinized starch.	41745
" 7	" .	41746	" ..	2 " ..	20	Moirs, Ltd., Halifax, N.S.	Orange slices. ..	2·48	+52·6	+ 3·8	72·8	"	Orange slices, acid drops.	41746
" 8	" ..	41747	Gasperi Poteri, Halifax, N.S.	2 " ..	20	Vendor	Teaberry drops....	3·10	+44·0	15·2	88·4	"	Wintergreen flavour, pink stripes	41747
" 13	" ..	41748	Boggs Bros., Kentville, N.S.	2 " ..	20	E. S. Perrin & Co., London, Ont.	Mixture.....	3·86	+63·2	+14·9	72·1	"	Stick candy, mixed.	41748
" 14	" ..	41749	Porter Bros., Wolfville, N.S.	2 " ..	20	Laing Mfg. Co., Montreal, P.Q.	"	4·10	+65·9	-23·0	61·0	"	Mixture	41749
" 15	" ..	41750	S. Thomson, Dartmouth, N.S.	2 " ..	25	Moirs, Ltd., Halifax, N.S.	Daisy mixture....	3·08	+45·1	-11·3	81·2	"	"	41750

DISTRICT OF PRINCE EDWARD ISLAND—THEO. MOORE, INSPECTOR.

Dec.	6	Highly Coloured Confectionery.	38616	Sterns Bros., Souris.	2 lbs.	20	Moirs, Ltd., Halifax, N.S.	...	1·80	+59·4	+11·5	71·5	None.	Mixture	38616
"	7	"	38617	A. J. McDonald, Souris.	2 "	20	G. J. Hamilton, Pictou, N.S.	.....	3·36	+57·7	+ 8·2	73·9	"	"	38617
"	7	"	38618	Mathew & McLean, Souris.	2 "	20	Lang Mfg. Co., Montreal.	.....	2·46	+59·7	+17·1	63·6	"	"	38618
"	8	"	38619	T. G. Holman, Charlottetown.	2 "	20	White Candie Co., St. John, N.B.	.....	3·22	+55·0	- 0·3	82·5	"	"	38619
"	8	"	38620	J. A. Hynes, Kensington.	2 "	24	Lang Mfg. Co., Montreal.	.....	3·88	+64·0	+22·3	62·2	"	"	38620
"	9	"	38621	D. McKenzie	2 "	20	G. J. Hamilton, Pictou, N.S.	.....	2·72	+55·1	- 0·2	82·5	"	"	38621
"	10	"	38622	T. W. Strong, Summerside.	2 "	20	Unknown	.....	4·16	+64·9	+22·4	63·4	"	"	38622
"	10	"	38623	Waugh & Steeves, Summerside.	2 "	20	The White Candie Co., St. John, N.B.	.....	2·82	+53·8	- 3·2	85·1	"	"	38623
"	14	"	38624	Coffin & Co., Charlottetown.	2 "	20	E. S. Perrin & Co., London, Ont.	.....	3·48	+63·7	+14·9	72·8	"	"	38624
"	14	"	38625	Mrs. W. F. Carter, Charlottetown.	2 "	24	Mrs. W. F. Carter, Charlottetown.	.....	2·82	+53·0	- 3·6	84·5	"	Mostly caramel colour.	38625

DISTRICT OF NEW BRUNSWICK—JNO. FERGUSON, INSPECTOR.

Dec.	7	Highly Coloured Confectionery.	39628	A. J. Russell, St. John, N.B.	2 lbs.	20	Vendor	Hard boiled mixture.	3·22	+57·1	+ 3·8	79·5	None.	Mixture	39628
"	7	"	39629	White Candy Co., Ltd., St. John, N.B.	2 "	20	Vendors	Royal mixture	2·92	+51·5	- 2·5	80·6	"	"	39629
"	7	"	39630	2 Barkers, Ltd., St. John, N.B.	2 "	20	"	High boiled mixed confectionery.	3·22	+57·0	+ 4·7	78·0	"	"	39630
"	8	"	39631	The Phillips & White Co., Ltd., St. John, N.B.	2 "	20	"	.....	2·08	+41·9	-17·0	85·9	"	"	39631
"	14	"	39632	Geo. F. Wilkes, Fredericton, N.B.	2 "	20	Ganong Bros., St. Stephen, N.B.	Regal mixture	3·04	+59·6	+ 6·2	79·7	"	Stick candy, mixed colours.	39632
"	15	"	39633	Ganong Bros., St. Stephen, N.B.	2 "	25	Vendors	Mixed candy	2·92	+59·3	+ 6·4	79·0	"	Mixture	39633
"	20	"	39634	Weaver & Co., Perth, N.B.	2 "	20	Ganong Bros., St. Stephen, N.B.	Merchants' hard boiled mixture.	1·54	+59·3	+ 8·2	76·3	"	"	39634
1910.															
Jan.	5	"	39635	2 Barkers, Ltd., Moncton, N.B.	2 "	20	Lang Mfg. Co., Montreal.	Cheap mixed candy would not guarantee purity.	4·02	+63·6	+21·7	62·7	"	" contains starch.	39635
	6	"	39636	George Stables, Newcastle, N.B.	2 "	20	Ganong Bros., St. Stephen, N.B.	Merchants mixture	2·48	+60·9	+ 8·2	78·7	"	Mixture	39636

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).	Results of Analysis. Moisture.	Sugar—Calculated to percentage on dry Substance. Polarization of half normal Sol. in 2 drm. tube. Direct.	Invert.	Cane Sugar by Clerget Formula	Arsenic.	Description.	No. of Sample.
DISTRICT OF NEW BRUNSWICK—JNO. FERGUSON, INSPECTOR—*Concluded.*								p. c.			p. c.			
1910.														
Jan. 8	Highly Coloured Confectionery.	39637	Moore's Bros., Campbellton, N.B.	2 " ..	20	White Candy Co., Ltd., St. John, N.B.	Royal mixture....	3·26	+54·2	− 1·6	83·3	None.	Mixture.....	39637
" 8	" ..	39638	Geo. Vermette, Campbellton, N.B.	2 " ..	20	" ..	"	3·02	+54·9	− 2·3	85 3	" .	"	39638
DISTRICT OF QUEBEC—E. BELAND, INSPECTOR.														
1909.														
Dec. 6	Highly Coloured Confectionery.	36501	J. L. F. Chabot, St. Germaine.	2 lbs..	20	Jos. Cote, Quebec.	.....	3·78	+60·8	+13·7	70·3	None.	Mixture	36501
" 6	" ..	36502	Jos. Chabot, St. Justine.	2 " ..	20	—. Scott, Junction Station.	.....	3·42	+53·6	+ 1·7	77·5	" .	"	36502
" 9	" ..	36503	Phileas Cloutier, St. Odillon.	2 " ..	20	Unknown....	.....	3·64	+59·5	+11·0	72·4	" .	"	36503
" 13	" ..	36504	F Bleaudoin, St. Henedine.	2 " ..	20	A. B. Dupuis, Quebec.	....	3·14	+53·9	+ 0·9	79·1	" .	"	36504
" 13	" ..	36505	J. B. Cadrin, St. Henedine.	2 " ..	20	Comp. Langevin, St. Hyacinthe.	....	3·86	+59 8	+11·5	72 1	" .	"	36505
" 13	" ..	36506	" ..	2 " ..	50	Royal Biscuit Co., St. Anne Pérade	... ...	3·62	+55·4	+ 3·2	77 9	" .	Mostly creams; red and yellow.	36506
" 2	" ..	36697	Eugene Royer, St. Claire.	2 " ..	20	Charle Audet, St. Anselme.	....	3·96	+50·3	− 4·8	82 0	" .	Mixture	36697
" 3	" ..	36698	Joseph Roy, St. Malachie.	2 " ..	20	A. B. Dupuis, St. Malochie.	....	2·84	+51·7	− 4·3	83·6	" .	"	36698

"	4	" ..	36699	Victor Blanchet, Standon Dorchester	2 " ..	20	The Montreal Biscuit, Montreal.	.....	3·32	+55·9	+ 2·7	79·4	" .	"	36699
"	4	" ..	36700	Venerant Allaire, St. Leon de Standon.	2 " ..	16	Charle Audet, St. Anselme.	....	3·90	+59·1	+10·6	72·4	" .	"	36700

DISTRICT OF ST. HYACINTHE—J. C. ROULEAU, INSPECTOR.

Dec.	6	Highly Coloured Confectionery.	38889	R. Roberge, Sorel..	2 lbs..	20	L. Martineau & Cie Ltd., Montreal.	Framboises.	3·22	+54·2	- 0·3	81·3	None.	Acid drops, raspberry.	38889
"	6	" ..	38890	L. Z. Drouin, La Baie	2 " ..	24	" ..	Wintergreen lozenges.	1·04	+52·1	- 7·4	88·8	" .	Pink tablets, contain starch.	38890
"	7	" ..	38891	Andrew Gianontsos, Sorel.	2 " ..	40	The McCormick Mfg. Co. Montreal.	Jujubes rouges....	8·08	+64·3	+22·8	61 9	" .	Gum drops.....	38891
"	9	" ..	38892	L. Z. Dupont, Farnham.	2 " ..	50	Actna Biscuit Co., Montreal.	Wintergreen berries.	2·30	+52·3	- 4·5	84·8	" .	Wintergreen berries, red.	38892
"	10	" ..	38893	Boulais frères, St. Jean.	2 " ..	24	Vendors.....	Red sticks.....	3·58	+68·0	+30·6	55·8	" .	Red sticks.....	38893
"	10	" ..	38894	Pappasons Restaurant, St. Jean.	2 " ..	20	Vendor.....	Yellow lemon.....	5·90	+53·7	+ 0·3	79·7	" .	Cream, yellow...	38894
"	20	" ..	38895	J. Houston, Danville	2 " ..	80	Christie, Brown & Co., Montreal.	Red berries.	1·16	+54·7	- 2·7	85·7	" .	Wintergreen berries, red.	38895
"	21	" ..	38896	M. E. Woodard, Sherbrooke.	2 " ..	40	Vendor	Peaches	1·32	+37·7	-15·7	79·7	" .	Acid drops, strawberry.	38896
"	21	" ..	38897	A. F. Shasha, Sherbrooke.	2 " ..	40	Rowell & Son, Sherbrooke.	Lemon drops.....	1·84	+54·9	+20·2	51·8	" .	Acid drops, lemon	38897
"	23	" ..	38898	J. B. Daignault&Cie, St. Hyacinthe.	2 " ..	20	Montreal Biscuit Co., Montreal.	Framboises.....	0·92	+61·8	+18·6	64·5	" .	" strawberry.	38898

DISTRICT OF MONTREAL—J. J. COSTIGAN, INSPECTOR.

Nov.	29	Highly Coloured Confectionery.	40392	Ideal Confectionery Co., Ltd., Montreal.	2 lbs..	18	Vendors.....	Surrette drops....	1·08	+37·5	-15·3	78·8	None.	Acid drops, lemon yellow.	40392
"	29	" ..	40393	" ..	2 " ..	18	"	Strawberry drops..	0·72	+64·5	+25·5	58·2	" .	Acid drops, strawberry, red.	40393
"	29	" ..	40394	L. Martineau Cie, Ltd., Montreal.	2 " ..	....	"	Clear mixture.....	1·54	+57·5	+ 9·4	71·8	" .	Acid drops, mixed colours.	40394
Dec.	10	" ..	40395	Leduc et frére, Valleyfield.	2 " ..	40	Star Biscuit Co., Valleyfield.	Strawberry drops..	3·10	+39·7	-15·5	82·4	" .	Acid drops, raspberry, red.	40395
"	16	" ..	40396	B. Beaubien, St. Jerome.	2 " ..	20	Viau et frére, Montreal.	" ..	1·80	+61·5	+22·7	57 9	" .	Acid drops, strawberry, red.	40396
"	16	" .	40397	P. Simard, St. Jerome.	2 " ..	20	" ..	Strawberry marbles	1·76	+63·1	+21·4	62 2	" .	Balls, pink stripes	40397
"	22	" ..	40398	Sperdakos Bros., 543 Notre Dame, W., Montreal.	2 " ..	20	" ..	Creams	4·24	+52·8	- 7·0	89·3	" .	Cream, pink... .	40398

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).	Results of Analysis. Moisture.	Sugar—Calculated to percentage on dry Substance. Polarization of half normal Sol. in 2 dm. tube. Direct.	Invert.	Cane Sugar by Clerget Formula	Arsenic.	Description.	No. of Sample.
DISTRICT OF MONTREAL—J. J. COSTIGAN, INSPECTOR—*Concluded.*														
1909.								p. c.			p. c.			
Nov. 22	Highly Coloured Confectionery.	40399	Beauvais & Lalonde, 482 St. James St., Montreal.	2 " ..	30	Perrins.....	Orange slice	7·78	+68·7	+40·5	42·1	None.	Orange slices, gelatinized starch.	40399
" 23	" ..	40400	J. A. Desaulniers, 1135 St. James St., Montreal.	2 " ..	20	.....	Strawberry drops..	1·26	+40·5	+ 0·3	60·0	" .	Acid drops, strawberry, red.	40400
" 23	" ..	40401	" ..	2 " ..	20	.....	Wintergreens.....	0·90	+51·4	− 7·2	87·5	" .	Pink tablets, contain starch.	40401
DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR.														
Nov. 24	Highly Coloured Confectionery.	42871	Bunnell Bros., Ottawa.	2 lbs..	20	Vendors.....	.....	2·90	+41·2	−17·1	87·0	None.	Sticks, coloured..	42871
" 24	" ..	42872	The McCormick Mfg. Co., Ltd., Ottawa.	2 " ..	14	"	.....	3·26	+62·1	+14·3	71·3	" .	Mixture.....	42872
" 24	" ..	42873	D. S. Perrin & Co., Ltd., Ottawa.	2 " ..	30	"	.....	1·11	+57·6	+ 0·8	84·8	" .	Conversational lozenges, colours	42873
" 24	" ..	42874	Mooney Biscuit & Candy Co., Ltd., Ottawa.	2 " ..	15	"	.....	2·98	+50·8	+ 0·6	71·9	" .	Mixture.....	42874
Dec. 4	" ..	42875	Robertson Bros. Ltd. Ottawa.	2 " ..	17	"	.....	3·28	+62·6	+11·5	71·8	" .	"	42875

"	10	"	..	42876	Geo. Trudel, 181 Rideau St., Ottawa.	2 "	..	20	Vendor		3·08	+34·5	−16·1	75·5	"	Sticks, red stripes	42876
"	11	"	..	42877	R. E. Keays Carleton Place.	1 lb	..	10	H. S. McNeill, Toronto.						"	Only a few coloured pieces.	42877
"	14	"	..	42878	W. T. Cleland, Kemptville.	2 lbs.	..	20	Abbott Grant & Co., Brockville.		3·34	+42·2	−15·5	86·0	"	Mixture	42878
"	16	"	..	42879	J. Brinkman, Smith's Falls.	2 "	..	25	Unknown		1·26	+53·1	− 6·2	88·5	"	Creams, mixed colours.	42879
"	17	"	..	42880	Fulton Bros., Chesterville.	2 "	..	20	Ganong Bros., St. John, N.B.		2·88	+61·3	+ 8·4	79·0	"	Mixture	42880

DISTRICT OF KINGSTON—JAS. HOGAN, INSPECTOR.

Nov.	29	Highly Coloured Confectionery.		42787	A. T. Prince, Kingston.	2 lbs.	..	50	Robertson Bros. Toronto.		1·50	+51·4	−13·6	97·0	None.	Conversational lozenges, colours.	42787
"	29	"	..	42788	G. Masoud, Kingston	2 "	..	65	"						"	Mixture, large amt. licorice.	42788
"	29	"	..	42789	T. Sakalls, Kingston	2 "	..	30	Vendor						"	Only a few coloured pieces.	42789
"	29	"	..	42790	Skandalis & Doulfas, Kingston.	2 "	..	40	Martineau, Montreal.		4·62	+57·4	+ 2·8	81·5	"	Mixture	42790
"	30	"	..	42791	W. J. Crothers, Kingston.	2 "	..	15	Vendor		3·60	+62·1	+12·0	74·8	"	"	42791
"	30	"	..	42792	W. H. Pritchard, Kingston.	2 "	..	65	"		1·52	+54·1	− 3·1	85·4	"	Wintergreen berries, red.	42792
Dec.	1	"	..	42793	J. Wallace, Belleville.	2 "	..	40	Robertson Bros., Toronto.		5·44	+55·5	− 1·5	85·1	"	Creams, mixed colours.	42793
"	1	"	..	42794	A. Perks, Cobourg	2 "	..	60	Nasmith, Toronto.		5·66	+39·6	+ 1·4	57·0	"	Contain chopped nuts, &c.	42794
"	1	"	..	42795	T. J. MeaTaggart, Port Hope.	2 "	..	20	Unknown		3·80	+59·9	+11·4	72·4	"	Mixture	42795
"	2	"	..	42796	T. H. Hopper, Peterboro.	2 "	..	40	Vendor						"	Only a few coloured pieces.	42796

DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.

Dec.	1	Highly Coloured Confectionery.		41421	C. Georgas, Collingwood.	2 lbs.	..	20	Vendor		1·78	+64·8	+22·7	62·8	None.		41421
"	3	"	..	41422	A. J. Stewart, Owen Sound.	2 "	..	60	"		0·88	+47·9	−16·5	98·3	"		41422
"	6	"	..	41423	Peter Christopher, Hamilton.	2 "	..	20	"		3·34	+59·6	+7·8	77·3	"		41423
"	7	"	..	41424	McDowell Bros., Dunville.	2 "	..	20	D. S. Perrin, London.		3·80	+63·4	+14·8	72·5	"	Mixture	41424
"	16	"	..	41425	F. A. Wilson, St. Catharines.	2 "	..	20	Laing Bros., Hamilton.		2·80	+43 9	−16·2	89·7	"	Sticks, red	41425
"	16	"	..	41426	J. D. Wright, St. Catharines.	2 "	..	20	Unknown		2·78	+43 2	−14·8	86·6	"	Mixture	41426

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report (Is not an expression of opinion).	Results of Analysis. Moisture.	Sugar—Calculated to percentage on dry Substance. Polarization of half normal Sol. in 2 dm. tube. Direct.	Invert.	Cane Sugar by Clerget Formula	Arsenic.	Description.	No. of Sample.
DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.														
1909.								p. c.			p. c.			
Dec. 17	Highly Coloured Confectionery.	41427	H. Grierson, Hamilton.	2 " ..	28	Vendor.....	.....	2·62	+48·3	6·3	81·5	None.	Creams, pink and yellow.	41427
" 22	" ..	41428	Robertson Bros., Ltd., Toronto.	2 " ..	20	Vendors.....	.....	9·20	+57·5	+1·2	83·9	" .	Creams, pink.....	41428
" 22	" ..	41429	Paris Candy Works, Toronto Junction.	2 " ..	20	"	.....	3·28	+56·7	+1·6	82·2	" .	Mixture.....	41429
" 23	" ..	41430	Boston Candy Store, Toronto.	2 " ..	20	Robertson Bros., Toronto.	.....	1·20	+62·7	+13·7	73·3	" .	"	41430
DISTRICT OF LONDON—T. KIDD, INSPECTOR.														
Dec. 11	Highly Coloured Confectionery.	30892	T. S. Blews, Seaforth	1 lb ..	20	McLaughlin's, Owen Sound.	.....	1·18	+57·1	0 0	85·2	None.	Conversational lozenges colours	30892
" 11	" ..	30893	Mrs. Jas. Gillespie, Seaforth.	1 " ..	20	Mooney Candy Co Stratford.	.....	0·60	+53·0	−8·7	92·1	" .	"	30893
" 13	" ..	30894	J. J. Edwards.....	1 " ..	15	Bean & Westley, Woodstock.	.....	2·72	+60 1	+8·3	77·3	" .	Sticks, red stripes.	30894
" 13	" ..	30896	H. T. Edwards.....	1 " ..	15	Mr. Jameson, Gault	.....	1·34	+56·5	+13·9	63·6	" .	Mixture.....	30896
" 16	" ..	44702	T. J. Molynaux, Dublin.	1 " ..	10	Bean & Westlake, Woodstock.	.....	3·16	+60·1	+9·1	76·1	" .	"	44702
" 18	" ..	44707	William Haight, Guelph.	1 " ..	20	Robertson Bros., Toronto.	.....	6·58	+56 0	−2·9	85·9	" .	Creams, pink and yellow.	44707
" 18	" ..	44708	Yates & Thomas, Guelph.	1 " ..	20	Vendors.....	.....	2·86	+57·7	+3·6	80·7	" .	Sticks, red stripes.	44708
" 21	" ..	44711	Pickard & Fleming, St. Mary's.	1 " ..	15	McCormick Co., London, Ont.	.....	5 01	+58·9	+9·5	73·7	" .	Gum drops.....	44711

1910.																
Jan.	5	"	..	44713	R. A. Climie, Listowell.	1 "	..	10	"		3·26	+63·7	+15·1	72·6	"	. Mixture.....	44713
"	5	"	..	44714	Joseph Respoe, Listowell.	1 "	..	10	Mooney M'f'g. Co. Stratford.	.....	3·38	+52·5	+0·6	77·5	"	. "	44714
"	5	"	..	44715	J. S. Gee, Listowel	1 "	..	15	Lumsden Bros., Hamilton.	....	4·70	+63·0	+11·8	76·4	"	. "	44715
					DISTRICT OF WINDSOR—JOHN TALBOT, INSPECTOR.											
1909.																
Dec.	6	Highly Coloured Confectionery.		42654	McTavishes Bakery, Aylmer.	2 lbs.	..	20	Mooney, Stratford	. ...	3·18	+60·0	+16·3	65·2	None.	Mixture.	42654
"	7	"	..	42662	R. M. Teall, Tillsonburg.	2 "	..	20	Mooney Biscuit & Candy Co. Stratford.	....	0·96	+52·8	+7·5	67·6	"	. Sticks — red and yellow.	42662
"	8	"	..	42671	O. R. Hanselman, Simcoe.	2 "	..	40	Weston's, Toronto	....	4·34	+64·6	+19·0	68·0	"	. Small creams—pink and yellow	42671
"	8	"	..	42674	G. O. Werrett, Simcoe.	2 "	..	40	D. S. Perrin Co., London.	....	1·42	+58·1	+1·0	85·2	"	. Conversational lozenges colours	42674
"	8	"	..	42675	Chas. F. Misner, Simcoe.	2 "	..	20	McCormick M'f'g. Co., London.	....	3·10	+61·9	+12·7	73·4	"	. Mixture.....	42675
"	9	"	..	42680	A. H. Tremains, Brantford.	2 "	..	30	Vendor..... ...	.....	2·96	+57·5	+4·7	78·8	"	. Sticks, red. ...	42680
"	13	"	..	42695	D. S. Perrin & Co., London.	2 "	..	30	Vendors	....	3·78	+60·3	+11·0	73·6	"	. Mixture..... .	42695
					DISTRICT OF MANITOBA—A. C. LARIVIERE, INSPECTOR.											
Dec.	8	Highly Coloured Confectionery.		39861	Foley Bros.& Larsen, Winnipeg.	2 lbs.	..	....	Vendors.....	....	3·78	+63·8	+16·0	71·3	None.	Mixture.....	39861
"	8	"	..	39862	Paulin Chambers Co., Winnipeg.	2 "	..	....	"	. .....	3·18	+56·0	+4·0	77·6	"	. "	39862
"	8	"	..	39863	Julius Bros., Winnipeg.	2 "	..	30	"	....	3·90	+62·6	+12·5	74·8	"	. Stick candy, many colours.	39863
"	8	"	..	39864	The W. J. Boyd Co., Ltd., Winnipeg.	2 "	..	....	"	.....	2·46	+54·3	−1·9	83·9	"	. Mixture.....	39864
"	8	"	..	39865	G. Castran, Winnipeg.	2 "	..	30	"	....	7·12	+57·9	+2·9	82·1	"	. Creams, pink.....	39865
"	15	"	..	39866	A. Binder, Winnipeg	2 "	..	25	Telfer Bros., Winnipeg.	. ...	3·22	+60·0	+9·7	75·1	"	. Mixture.....	39866
"	15	"	..	39867	W. L. Walsserman, Winnipeg.	2 "	..	30	Thos. H. Lock & Co., Winnipeg.	....	3·10	+57 4	+5·3	77.7	"	. "	39867
"	15	"	..	39868	Max Zissman, Winnipeg.	2 "	..	40	McCormick, London, Ont.	.....	3·02	+61·1	+10·6	75·4	"	. "	39868
"	15	"	..	39869	G. Venier, Winnipeg	2 "	..	30	Unknown.....	....	3·06	+53·5	−2·6	83·7	"	. "	39869
"	16	"	..	39870	B. Frank, Winnipeg	2 "	..	25	The Paulin Chambers Co,, Winnipeg.	.....	3·22	+56·9	+5·3	77·0	"	. "	39870

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report (Is not an expression of opinion).	Results of Analysis. Moisture.	Sugar—Calculated to percentage on dry Substance. Polarization of half normal Sol. in 2 dm. tube. Direct.	Invert.	Cane Sugar by Clerget Formula	Arsenic.	Description.	No. of Sample.
DISTRICT OF CALGARY—R. W. FLETCHER, INSPECTOR.														
1909.								p. c.				p. c.		
Dec. 10	Highly Coloured Confectionery.	43641	D. Milne Co., Ltd., Medicine Hat.	2 lbs.	40	Robertson Bros., Toronto.		3·66	+62·5	+13·8	72·7	None	Mixture.	43641
" 10	"	43642	L. B. Cochrane, Medicine Hat.	2 "	40	"		1·80	+62·9	+19·3	65·1	*Very slight trace.	"	43642
" 10	"	43643	H. W. Ireland Co., Medicine Hat.	2 "	30	McCormick Mfg. Co., London, Ont.		2·34	+60·0	+11·2	72·7	None	"	43643
" 10	"	43644	R. Dunn, Medicine Hat,	2 "	30	"		2·98	+59·7	+10·5	73·4	"	"	43644
" 11	"	43645	H. Morrow, Medicine Hat.	2 "	40	Georgeson Co., Ltd., Calgary.		3·48	+64·4	+19·1	75·4	"	"	43645
" 16	"	43646	S. G. Freeze, Calgary	2 "	25	D. S. Perrin & Co., London, Ont.		2·76	+60·1	+ 8·6	76·7	"	"	43646
" 16	"	43647	Peter Mores, Calgary	2 "	30	Vendor		4·06	+61·0	+12·1	73·0	"	Creams, pink and yellow.	43647
" 16	"	43648	J. T. Macdonald, Calgary.	2 "	25	Mooney Biscuit & Candy Co., St atford.		4·07	+58·9	+ 9·7	73·4	"	Mixture	43648
" 30	"	43649	Hudson's Bay Co., Lethbridge.	2 "	30	"		3·84	+63·6	+19·5	65·9	"	"	43649
" 30	"	43650	Bentley Co., Lethbridge.	2 "	30	"		3·26	+56·8	+ 9·1	71·3	"	"	43650

* Trace of arsenic ; amount harmless.

DISTRICT OF VANCOUVER—J. F. POWER, INSPECTOR.

Dec.	15	Highly Coloured Confectionery.	37803	S. Narcus, Vancouver	2 lbs.	50	Robertson & Co.		0·88	+53·0	− 9·5	93·2	None.	Conversational lozengers, colours	37803
"	15	"	37804	Eagle Cigar Store, Vancouver.	2 "	25	Ramsay Bros.		3·52	+57·1	+ 3·4	80·3	"	Mixture	37804
"	15	"	37805	Lewis & Tingerhurst, Vancouver.	2 "	30	M. R. Smith & Co.		2·30	+54·5	− 3·4	86·3	"	"	37805
"	15	"	37806	Athens Candy Co., Vancouver.	2 "	50	Ganong Bros.		3·78	+61·8	+ 9·8	77·5	"	"	37806
"	15	"	37807	Mrs. O'Brien, Vancouver.	2 "	40	Foley, Lock & Larsen.		3·58	+61·4	+10·4	76·1	"	"	37807
"	15	"	37808	J. A. Dickie, Vancouver.	2 "	50	Roberts & Co		0·98	+51·5	8·4	89·4	"	" contain starch.	37808
"	17	"	37809	Olympia Candy Co., Vancouver.	2 "	40	Connolly, Watson & Beoin.		3·14	+63·5	+15·3	71·9	"	Mixture	37809
"	17	"	37810	R. Mitchell	2 "	30	Ramsay Bros.		3·44	+57·2	+ 3·0	80·8	"	" coated gum drops, starch gelatinized.	37810
"	17	"	37811	E. P. Charlton, Vancouver.	2 "	25	Pan Confectionery Co., Chicago, Ill.		4·18	+68·5	+30·8	56·3	"		37811
"	17	"	37812	Europe Grocery	1½ "	20	Unknown		3·06	+55·9	+ 2·3	80·0	"	Mixture, sample dirty.	37812

DISTRICT OF VICTORIA—D. O'SULLIVAN, INSPECTOR.

Dec.	10	Highly Coloured Confectionery.	41609	W. Speed, Victoria, B.C.	2 lbs.	30	Ganong Bros., St. Stephen, N.B.	Regal mixture	3·94	+60·3	+ 9·2	76·3	None.	Mixture	41609
"	10	"	41610	The Saunders Grocery Co., Ltd., Victoria, B.C.	2 "	30	R. P. Rithet & Co., Victoria, B.C.		2·72	+55·4	− 1·4	84·7	"	"	41610
"	10	"	41611	"	2 "	30	"		1·00	+52·8	− 7·8	90·9	"	Varied mixture, contain starch.	41611
"	13	"	41612	H. A. Lilley, Victoria, B. C.	2 "	30	Vendor		2·54	+39·0	− 14·6	79·9	"	Mixture	41612
"	14	"	41613	R. Erskine & Co., Victoria, B.C.	2 "	30	G. R. King, Victoria, B.C.		3·90	+62·2	+11·9	75·1	"	"	41613
"	14	"	41614	A. Pool, Victoria, B.C.	2 "	30	Popham Bros., Victoria, B.C.		3·84	+47·1	−10·8	86·4	"	"	41614
"	16	"	41615	Harcop & Antipas, Victoria, B.C.	2 "	50	Savin Bros., Vancouver.							Mixture not highly coloured.	41615
"	16	"	41616	V. Stramatares, Victoria, B.C.	2 "	40	The Bray Co., Victoria.		2·60	+52·2	− 3·4	83·0	None.	Mixture	41616
"	16	"	41617	"	2 "	35	"		2·02	+51·8	− 4·6	84·2	"	" contains starch.	41617
"	16	"	41618	T. Vasilatos, Victoria, B.C.	2 "	50	Batger & Co., London, Eng.		1·62	+46·5	−12·8	88·6	"	"	41618

APPENDIX V.

BULLETIN No. 201—FLAVOURING EXTRACT OF VANILLA.

OTTAWA, March 11, 1910.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I have the honour to hand you a report dealing with 77 samples, purchased throughout Canada, as Flavouring Extract of Vanilla, in December last.

The last examination of this article was reported in Bulletin No. 89 (Sept., 1903). That report showed, in 21 samples, the following variations of character :—

Vanillin,	varies	in amount	from	0·012	to 0·268
Coumarin	"	"		0·016	" 0·160
Alcohol	"	"		5·470	" 50·470
Sugar	"	"		0·600	" 25·000

The present inspection (77 samples) indicates still greater variation :—

Vanillin	varies	in amount	from	0·000	to 1·419
Coumarin	"	"		0·000	" 0·186
Alcohol	"	"		1·300	" 52·800

The question, 'What is wanted, or expected, when a purchaser demands Extract of Vanilla?' seems pertinent.

The dried, fermented pod of *Vanilla Planifolia*, is an article of export from the West Indian Islands, Mexico, and some other localities. The extract of Vanilla is undoubtedly supposed to be prepared from this pod, by maceration in alcohol, with or without the addition of sugar and glycerin. The United States defines Extract of Vanilla thus :—'Vanilla Extract is the flavouring extract prepared from the dried, cured fruit of Vanilla Planifolia, with or without sugar or glycerin, and contains in 100 cubic centimetres, the soluble matters from not less than 10 grammes of the Vanilla bean.'

The extractive matters referred to are, a crystallin substance known as *Vanillin*, and certain resins ; and the characteristic flavour of genuine vanilla is due to the combined flavours of these extractives. Undoubtedly the vanillin contributes chiefly to this total flavour ; but that it does not entirely account for it is manifest when we consider that the most highly valued beans are not those which yield the highest percentage of vanillin. Thus Tiemann and Harmann (1) found as follows :—

Mexican	beans	1·69	p.c. Vanillin
Bourbon	"	2·48	" "
Java	"	2·75	" "

Vanillin manufactured from Eugenol (and other sources) is an article of commerce, and is chemically identical with the vanillin from the bean. It is, however, quite evident that a solution of manufactured (Synthetic) vanillin, cannot be regarded as identi-

(1) Leach—Food Analysis, &c., p. 730,

cal with the flavouring extract, as above defined. The difference is one of *flavour* due to the presence of specific resins (and probably small amounts of undetermined matters) peculiar to the bean, and as essential to the production of a true vanilla flavour as the vanillin itself.

In order to ascertain what amounts of vanillin may be present in the genuine extract, Winton and Silvermann (2) prepared five extracts, according to the formula given in the U. S. Pharmacopœia, and obtained as follows :—

Grade of Bean.	Specific Gravity.	Vanillin.	Alcohol (wgt)	Total Residue.	Cane Sugar.	Non-sugar Solids
Mexican (whole)..	1·0159	0·125	37·96	22.60	19·90	2·70
" (cut)	1·0146	0·065	39.92	23·10	19·20	3·90
South American (whole).	1·0109	0·215	38·58	22·00	19·00	3·00
Bourbon (whole)...	1·0166	0.138	38·32	23·13	20·40	2·73
Tahiti (whole)	1·0104	0·108	38·84	21·75	20·00	1·75

From this it appears that the vanillin in genuine extracts may vary from about 0·065 to 0·215. It seems fair to conclude that where the vanillin much exceeds 0·200 per cent in an extract artificial or synthetic vanillin has been used.

Coumarin is a substance which somewhat resembles vanillin in its flavour, but is quite distinct chemically. It is found in the Tonka bean, and is also prepared synthetically. On account of its cheapness it is much used to adulterate vanilla extract, and it will be seen that in the collection now reported it is present in 61 out of 77 samples examined. In one case it entirely replaces vanillin. The flavour of Coumarin is not identical with that of vanillin. Leach (3) says of it:—'The odour of Coumarin is more pungent and penetrating than that of vanillin, and in mixtures is apt to predominate over the milder and more delicate odour of vanillin.'

There can be no doubt that extracts containing Coumarin should be required to announce the fact, either by explicit statement, or by being sold as compounds.

The use of alcohol is necessary in preparing the genuine extract of vanilla, not so much to dissolve the vanillin which is rendered more soluble by the presence of sugar, as in order to get the characteristic resins into solution. Hence, an extract cannot meet the requirements of a true vanilla bean extract, unless it contains from 30 to 40 per cent of alcohol.

In the absence of any legal standard for Flavouring Extract of Vanilla, it is impossible for me to express an opinion upon the samples now reported. In a general way it may be asserted, (1) that those containing notably more than 0·200 per cent of vanillin are probably prepared from synthetic vanillin. There are some 31 samples of the present collection which fall in this class. (2) That those which contain less than 30 per cent of alcohol, are either not made from the bean, or are necessarily lacking in those odoriferous resins which are characteristic of the vanilla bean. Some 36 samples fall into this class. (3) Those samples which contain more than traces of Coumarin, are not, in the truest sense, extracts of vanilla, and should be sold as compounds. Some 58 samples must be thus classified.

The report now submitted, together with that published in Bulletin 89, will enable the public to judge of the character of Commercial Vanilla Extracts, and will also furnish material for the defining of this article, under section 26 of the Adulteration Act.

I beg to recommend the publication of this report as Bulletin No. 201.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

(2) Report Conn. Agr. Station—1901, 150.
(3) Foods, &c.,—p. 734.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).	Results of Analysis. Vanillin per 100cc.	Coumarin per 100cc.	Alcohol by Volume.	No. of Sample
DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR.											
1909.								p. c.	p. c.	p. c.	p. c.
Dec. 6	Flavouring Extract of Vanilla.	41756	Nat. Drug. & Chem. Co., Halifax, N. S.	3 bots	20	Vendors	'Soverign'	·236	·038	52·8	41756
" 7	" ..	41757	John Tobin & Co., Halifax, N.S.	3 "	45	Sheriff, Toronto		·305	·028	33·1	41757
" 7	" ..	41758	Chisholm & Co., Halifax, N.S.	3 "	30	J. E. Gass, Halifax, N.S.		·272	·057	17·7	41758
" 7	" ..	41759	R. B. Seeton & Co., Halifax, N.S.	3 "	38	Robinson Mfg. Co., Toronto		·238	·034	26·5	41759
" 13	" ..	41740	S. L. Cross, Kentville, N. S.	3 "	30	Pure Gold Mfg. Co., Toronto		·073	·036	37·1	41740
DISTRICT OF PRINCE EDWARD ISLAND—THEO. MOORE, INSPECTOR.											
Dec. 6	Flavouring Extrat of Vanilla.	38601	C. C. Carleton, Souris	6 oz.	60	Chamberland Med. Co. Toronto.	Chamberland's superior vanilla flavouring compound	·476	·047	10·5	38601
" 7	" ..	38602	J. C. Ferguson, Souris	6 "	60	H. K. Wampole & Co., Perth, Ont.		·158	nil.	31·3	38602
" 8	" ..	38603	E. T. Reardon, Charlottetown	6 "	60	F. F. Dalley Co., Ltd., Hamilton.	Dalley's pure fruit extract	070	·043	30·6	38503
" 9	" ..	38604	D. McKenzie, Kensington	7½ "	75	Imperial Extract Co., Toronto.	Sheriff's Imperial quintessence true vanilla.	·268	·029	37·5	38604
" 10	" ..	38605	G. W. Warren, Summerside	6 "	60	The Baird Co., Limited, Woodstock, N. B.	Baird's superior extra vanilla flavouring extract. Highly concentrated.	·241	·044	31·7	38605
DISTRICT OF NEW BRUNSWICK—J. C. FERGUSON, INSPECTOR.											
Dec. 2	Flavouring Extract of Vanilla.	39613	Nat. Drug. & Chem. Co., Ltd., St. John, N.B.	3 bots	45	Vendors	'Star' Brand	·084	·036	46·8	39613
" 3	" ..	39614	Dearborn & Co., St. John, N.B.	3 "	75	"	'Dearborn' brand	·302	nil.	33·1	39614

"	8	"	..	39615	G. E. Barbour & Co., Ltd., St. John, N.B.	3	"	60	"	'Acorn' brand	·503	·021	38·8	39615
"	20	"	..	39616	F. D. Sadler, Perth, N. B.	3	"	30	Nat. Drug. & Chem. Co., St. Johns, N. B.	Standard extract of vanilla	·078	·031	20·6	39616
1910.														
Jan.	4	"	..	39617	The Sussex Mercantile Co., Ltd., Sussex, N. B.	3	"	60	Vendors	Vanilla pure concentrated extract.	·093	012	41·9	39617

DISTRICT OF QUEBEC—E. BELAND, INSPECTOR.

1909.														
Dec.	1	Flavouring Extract of Vanilla.		36682	J. M. Ouillet, St. Anselme.	3	bots	30	W. Brunet & Cie, Quebec.		·339	nil.	32·0	36682
"	1	"	..	36683	Charle Audet, St. Anselme.	3	"	30	J. B. Reneaud & Cie, Quebec.		·069	·078	13·7	36683
"	1	"	..	36684	J. B. Cadaret, St. Anselme.	3	"	30	Whitead & Turner, Quebec		·129	·077	8·8	36684
"	1	"	..	36685	Arthur Lacasse, St. Claire	3	"	30	Dr. Ed. Morin, Quebec.		·354	·035	33·8	36685
"	1	"	..	36686	Joseph Brown, St. Claire.	3	"	30	Unknown		·022	nil.	18·0	36686

DISTRICT OF ST. HYACINTHE—J. C. ROULEAU, INSPECTOR.

Dec.	6	Flavouring Extract of Vanilla.		38874	Alp. Casaubon, Sorel.	3	"	30	H. Jonas & Cie, Montreal.	Double strength	·030	nil.	17·7	38874
"	7	"	..	38875	H. Tourangeau, Verchéres	3	"	25	Lyman's Ltd., Montreal.	'Standard' brand	·353	·128	35·5	38875
"	9	"	..	38876	L. Ed Choquette, Farnham	3	"	30	G. A. Truax, Farnham.	'Bee' brand	·511	·128	7·8	38876
"	20	"	.	38877	H. P. Wales, Richmond.	3	"	30	Birks, Corner & Co., Montreal.	Diamond brand concentrated.	·579	·063	1·3	28877
"	21	"	..	38878	A. Leclair, Sherbrooke	3	"	30	Integrity Mills, Toronto.	Double strength	·040	·110	7·8	38878

DISTRICT OF MONTREAL—J. J. COSTIGAN, INSPECTOR.

Dec.	1	Flavouring Extract of Vanilla.		40371	The Brodie Mfg. Co., St. Paul St., Montreal.	3	bots	45	Vendors		·282	·101	15·4	40371
"	1	"	..	40372	Pelletier et Frére, 17 Chaboillez Square, Montreal.	3	"	30		'Own Own' brand	nil.	·095	15·0	40372
"	1	"	..	40373	James Duncan, Lachine, P.Q.	3	"	25		'Hercules' brand	·163	·042	19·1	40373
"	2	"	..	40374	Herron Leblanc Ltd., 573 St. Paul St., Montreal.	3	"	40	Vendors	'Crown brand'	·564	·048	33·8	40374
"	2	"	..	40375	Henri Jonas Co., St. Paul St., Montreal.	3	"	37	"		·304	nil.	27·4	40375

BULLETIN No. 201—FLAVOURING EXTRACT OF VANILLA.

Date of Collection	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).	Results of Analysis. Vanillin per 100cc.	Coumarin per 100cc.	Alcohol by Volume.	No. of Sample
DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR.											
1909.								p. c.	p. c.	p. c.	
Dec. 3	Flavouring Extract of Vanilla.	42856	Goodall Bros, Ottawa	3 bots	60	McLaren's, Ltd., Hamilton	'McLaren's'	·089	·050	30·6	42856
" 4	"	42858	Wm. York, Ottawa	3 "	75	H. N. Bate & Sons, Ottawa	'Sherriff's'	·272	·030	37·4	42858
" 6	"	42860	W. B. Graham, Ottawa	3 "	75	McLaren's, Ltd., Hamilton	Labelled McLaren's true vanilla.	·145	·043	36·8	42860
" 14	"	42862	Jas. L. P. Sanders, Kemptville	3 "	75	Davis & Lawrence Co. Ltd. Montreal.	'Davis & Lawrence'	·174	nil.	40·8	42862
" 16	"	42864	J. A. Gemmill, Smith's Falls	3 "	30	Unknown	Labelled 'Alexandra' Gorman Eckert & Co.	·062	·084	15·3	42864
DISTRICT OF KINGSTON—JAS. HOGAN, INSPECTOR.											
Dec. 1	Flavouring Extract of Vanilla.	42772	R. Templeton, Belleville	6 oz.	35	Vendor		·087	·041	32·7	42772
Nov. 29	"	42773	C. S. Prouse, Kingston	6 "	50	"		·206	nil.	45·4	42773
" 30	"	42774	N. C. Polson, Kingston	6 "	35	"		·251	nil.	49·6	42774
Dec. 1	"	42775	W. H. A. Semple, Cobourg	6 "	20	"		·579	·073	1·8	42775
" 1	"	42776	H. Mitchell, Port Hope	6 "	50	"		·722	·104	32·4	42776
DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.											
Dec. 17	Flavouring Extract of Vanilla.	41431	Imperial Cocoa & Spice Co., Ltd., Hamilton.	3 bots.	35	Vendors	Red Feather quality flavouring extract.	·313	Nil.	21·5	41431
" 17	"	41432	Geo. E. Bristol & Co., Hamilton.	3 "	30	Imperial Spice Co., Ltd., Hamilton.	Labelled vanilla empire tripple extract.	·117	·042	4·7	41432

"	17	"	..	41433	Smarts Tea Co., Hamilton. . . .	3	" .	30	McLarens, Ltd., Hamilton	Maple leaf extract of vanilla	·496	·040	17·7	41433
"	21	"	..	41434	The J. M. Lowes Co., Ltd., Toronto.	3	" .	50	Vendors.....	Labelled vanilla	·336	·097	14·7	41434
"	23	"	..	41435	Robinson Mfg. Co., Hamilton. .	3	" .	20	"	"	·081	·091	10·0	41435

DISTRICT OF LONDON—T. KIDD, INSPECTOR

Dec.	6	Flavouring Extract of Vanilla.	..	30868	Alexander Steward, Guelph.....	3 bots.		30	Vendor...	....	·158	·010	39·8	30868
"	8	"	..	30876	E. O. Ritze & Co., Berlin.	3	" .	40	Nat. Drug & Chem. Co., Hamilton.	....	·136	·095	18·1	30876
"	10	"	..	30887	H. M. Myers, Stratford	3	" .	45	Vendor.....	....	·086	·088	29·3	30887
"	11	"	..	30888	Chas. Andrews, Seaforth.....	3	" .	30	Can. Spice & Grocery Co., London, Ont.	... .	180	·031	13·1	30888
"	13	"	..	30899	James Wilson, Goderich	3	" .	45	Toronto Pharmacy, Toronto	....	·199	·046	41·5	30899
"	16	"	..	44701	Peter Dill, Dublin.....	3	" .	30	Robertsons Mfg. Co., Toronto.	....	·078	·113	10·9	44701
"	17	"	..	44705	Wm. Stoneman, Mitchell.....	3	" .	30	F. F. Dalley Co., Ltd., Hamilton.	....	·153	·098	29·9	44705

DISTRICT OF WINDSOR—JNO. TALBOT, INSPECTOR.

Dec.	6	Flavouring Extract of Vanilla.	..	42655	Poustie & Co., Aylmer.....	3 bots.		30	Imperial Extract Co., Toronto.	.....	·035	·051	18·8	12655
"	6	"	..	42660	W. J. Gibson, Tillsonburg.....	3	" .	30	F. F. Dalley Co., Ltd., Hamilton.	Labelled gold seal	128	·026	14·2	42660
"	7	"	..	42666	Ray P. Colbourn, Tillsonburg...	3	" .	25	Hamilton Chem. Works...	Topical flavouring extract..	148	036	19·4	42666
"	8	"	..	42672	R. Edwards, Simcoe..	3	" .	30	F. P. Reid & Co., Moncton, N.B.	Pyramid brand vanilla flavouring extract.	183	·186	10·3	42672
"	9	"	..	42679	Fred. C. Harp, Brantford.....	3	" .	25	F. F. Dalley Co., Ltd., Hamilton.	Labelled gold seal	·190	·056	29·3	42679

BULLETIN No. 201—FLAVOURING EXTRACT OF VANILLA.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).	Results of Analysis. Vanillin per 100cc.	Coumarin per 100cc.	Alcohol by Volume.	No. of Sample
DISTRICT OF MANITOBA—A. C. LARIVIERE, INSPECTOR.											
1909.								p. c.	p. c.	p. c.	
Dec. 6	Flavouring Extract of Vanilla.	39821	Blue Ribbon Mfg. Co., Winnipeg	3 bots.	50	Vendors	'Blue Ribbon' extract	·321	Nil.	43·6	39821
" 6	"	39822	Campbell Bros. & Wilson, Winnipeg.	3 "	40	"	'Royal Shield' extract	·220	·040	15·3	39822
" 7	"	39823	The Dyson Co., Winnipeg.	3 "	65	"	'Red Cross' extract	1·317	·047	32·7	39823
" 7	"	39824	Gold Standard Mfg. Co., Winnipeg.	3 "	45	"	'Gold Standard' extract	·171	Nil.	30·3	39824
" 7	"	39825	The White Star Mfg. Co., Winnipeg.	3 "	30	"	'White Star' extract	·093	·114	35·2	39825
DISTRICT OF CALGARY—R. W. FLETCHER, INSPECTOR.											
Dec. 10	Flavouring Extract of Vanilla.	43626	L. B. Cochrane, Medicine Hat	3 bots.	75	Gold Standard Mfg. Co., Winnipeg.		·269	Nil.	33·8	43626
" 10	"	43627	H. H. Ireland Co., Medicine Hat	3 "	1 05	McLarens Ltd., Hamilton.		·110	·054	32·1	43627
" 10	"	43628	R. Dunn, Medicine Hat	3 "	75	Gold Standard Mfg. Co., Winnipeg.		·191	·012	26·2	43628
" 17	"	43629	Copas & Emerson, Calgary	3 "	75	G. F. Sutton Sons Co., London, Eng.		·264	Nil.	48·9	43629
" 17	"	43630	W. A. Georgeson Co., Ltd., Calgary.	3 "	75	Vendors		·188	Nil.	41·9	43630

DISTRICT OF VANCOUVER—J. F. POWER, INSPECTOR.

Dec.	9	Flavouring Extract of Vanilla.	37788	Herbert Moore, New Westminster.	3 bots.	50	Empress Mfg. Co., Vancouver.	.....	·128	·030	25·6	37788
"	9	" ..	37789	A. & D. DesBrisay, New Westminster.	3 " .	75	Young Bros	.....	1·419	·137	15·7	37789
"	9	" ..	37790	A. Lilly, Vancouver.....	3 " .	75	Pure Gold Mfg. Co.....	.....	·089	036	37·5	37790
"	13	" ..	37791	H. A. Edgett Co., Vancouver...	3 " .	40	Climax Extract Co.....	.....	·066	·036	17·3	37791
"	13	" ..	37792	Geo. Wagg, Vancouver.....	3 " .	40	Gorman, Eckert Co., London.	.....	·059	057	21·3	37792

DISTRICT OF VICTORIA—D. O'SULLIVAN, INSPECTOR.

Dec.	10	Flavouring Extract of Vanilla.	41594	Windsor Grocery Co., Victoria, B.C.	3 bots.	75	Pure Gold Mfg. Co., Toronto.	Pure Gold vanilla flavouring.	·086	·044	37·8	41594
"	10	" ..	41595	The Saunders Grocery Co., Ltd., Victoria, B.C.	3 " .	75	Sherriffs, Toronto.....	Sherriffs Imperial quintessence of true vanilla.	·263	·024	36·1	41595
"	13	" ..	41596	Acton Bros., Victoria, B.C.....	3 " .	75	Empress Mfg. Co., Vancouver, B.C.	'Empress' brand	·136	·053	28·3	41596
"	14	" ..	41597	R. Erskine & Co., Victoria, B.C.	3 " .	75	Pioneer Coffee Mills, Victoria, B.C.	'Star' brand	1·088	Nil. .	26·5	41597
"	15	" ..	41598	W. A. Jameson Coffee Co., Victoria, B.C.	3 "	60	Empress Mfg. Co., Vancouver, BC.	'Nectar' flavouring extract.	·066	·056	18·8	41598

APPENDIX W.

BULLETIN No. 202—BORAX (EXAMINATION FOR ARSENIC.)

OTTAWA, March 17, 1910.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I beg to hand you herewith a report upon the examination of 151 samples of Borax collected throughout Canada in December last.

The inspection has regard to the contamination of this article by arsenic. Borax is very largely employed as a preservative for meats, butter, and other articles of food and it is consequently of great importance that it should be free from arsenic, or other dangerous impurity. One hundred and thirty-five (135) samples are found to be entirely free from arsenic. The remaining sixteen (16) samples contain the following amounts of arsenic (As_2O_3) per 100 grammes; also stated as parts per million.

No. of Sample.	Milligrammes per 100 grammes.	Parts per million.
42670	1·0	10
36659	0·5	5
42844	0·5	5
30867	0·5	5
42673	0·5	5
42689	0·5	5
43606	0·5	5
41622	0·5	5
36660	0·4	4
41407	0·4	4
42691	0·4	4
41784	0·3	3
41777	0·2	2
39589	0·2	2
42681	0·2	2
41624	0·2	2

The effective dose of arsenic named by the British Pharmacopœia varies from 1 to 4 milligrammes. We possess no standard of purity for borax as regards arsenic, but it is safe to say that even the maximum amount found cannot be regarded as dangerous to health.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).	Results of Analysis. Arsenic per 100 Grams.	Results of Analysis. —	No. of Sample.
DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR.										
1909.										
Dec. 6	Borax	41776	Nat. Drug and Chem. Co., Halifax, N.S.	1 lb.	8	Am. Alkali Co.	20th Century crystals.	None.		41776
" 8	"	41777	C. E. Huggins, Halifax, N.S.	1 "	10	Nat. Drug and Chem. Co., Halifax, N.S.	Crystals	0·2	Milligrams.	41777
" 8	"	41778	M. P. Caffrey, Halifax, N.S.	1 "	10	" "	"	None.		41778
" 8	"	41779	M. D. Logan, Halifax, N.S.	1 "	15	" "		"		41779
" 8	"	41780	Irwin & Sons, Halifax, N.S.	1 "	35	E. Merek, Darmstadt, Germany.	C. P. powdered.	"		41780
" 8	"	41781	J. St. C. Coombes, Halifax, N.S.	1 "	20	Nat. Drug and Chem. Co., Halifax, N.S.	Powdered.	"		41781
" 10	"	41782	Truro Drug Store, Truro, N.S.	1 "	15	Black & Co., Truro, N.S.		"		41782
" 10	"	41783	Black & Co., Truro, N.S.	1 "	8	W. T. Cox, Montreal, P.Q.		"		41783
" 13	"	41784	D. Day, Wolfville, N.S.	1 "	10	Nat. Drug and Chem. Co., Halifax, N.S.	Powdered.	0·3	Milligrams.	41784
" 13	"	41785	A. V. Rand, Wolfville, N.S.	1 "	15	" "	Crystals	None.		41785
DISTRICT OF PRINCE EDWARD ISLAND—THEO. MOORE, INSPECTOR.										
Dec. 7	Borax	38573	A. A. McDonald, Souris	1 lb.	10	Nat. Drug and Chem. Co., Halifax, N.S.		None.		38573
" 7	"	38574	J. C. Ferguson, Souris	1 "	15	" "		"		38574
" 8	"	38575	Johnson & Johnson, Charlottetown.	1 "	15	Lymans, Ltd., Montreal.		"		38575
8	"	38576	A. W. Reddin, Charlottetown.	1 "	15	Lyman & Son, Montreal.		"		38576

"	9	"	38577	Jardine & Bernard, Kensington.	1	"	15	Can. Drug Co., Halifax, N.S.		"			38577
"	9	"	38578	Edgar Keir, Kensington	1	"	15	" "		"			38578
"	10	"	38579	A. W. P. Gourlie, Summerside	1	"	15	Lyman, Knox & Co., Montreal.		"			39579
"	10	"	38580	McFadyen & McLellan, Summerside.	1	"	15	Can. Drug Co., St. John, N.B.		"			38580
"	10	"	38581	P. N. Enman, Summerside	1	"	15	Nat. Drug Co., Halifax, N.S.		"			38581
"	15	"	38582	McDonald & McKinnon, Charlottetown.	1	"	15	Lyman Sons & Co., Montreal		"			38582

DISTRICT OF NEW BRUNSWICK—J. C. FERGUSON, INSPECTOR.

Dec.	2	Borax	39588	Nat. Drug and Chem. Co., Ltd., St. John, N.B.	1	lb.	10	Borax Consolidated Co., Liverpool, Eng.	Powdered	None			39588
"	14	"	39589	C. A. Burchill, Fredericton, N.B.	1	"	25	Can. Drug Co., Ltd., St. John, N.B.	"	0·2	Milligrams		39589
"	15	"	39590	Johnston & Johnston, St. Stephen, N.B.	1	"	20	Nat. Drug and Chem. Co., Ltd., St. John, N.B.	Crystals	None			39590
"	17	"	39591	C. A. McKeen, Woodstock, N.B.	1	"	20	The Can. Drug Co., St. John, N.B.	"	"			39591
"	20	"	39592	R. W. L. Earle, M.D., Perth, N.B.	1	"	20	Unknown	"	"			39592
1910.													
Jan.	4	"	39593	B. J. Sharp, Sussex, N.B.	1	"	15	Nat. Drug and Chem. Co., Ltd., St. John, N.B.		"			39593
"	5	"	39594	The Acadia Drug Co., Moncton, N.B.	1	"	25	" "		"			39594
"	6	"	39595	T. J. Dwriek, Newcastle, N.B.	1	"	20	" "		"			39595
"	7	"	39596	A. E. Shaw, Newcastle, N.B.	1	"	20	" "		"			39596
"	8	"	39597	A. McG. McDonald, Campbelltown, N.B.	1	"	20	" "		"			39597
"	8	"	39639	F. Wran, Campbellton, N.B.	1	"	15	Lymans, Ltd., Montreal		"			39639

DISTRICT OF QUEBEC—E. BELAND, INSPECTOR.

1909.													
Dec.	1	Borax	36657	Orel Roy, St. Anselme	1	lb.	15	Charle Audet, St. Anselme		None			36657
"	1	"	36658	Ludger Mignault, St. Anselme.	1	"	12	Antoine Carier fils, Levis		"			36658
"	1	"	36659	Edmond Feltcau, St. Anselme.	1	"	15	Sultana Mgr., Montreal		0·5	Milligrams		36659

BULLETIN No. 202—BORAX—EXAMINATION FOR ARSENIC.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis. Arsenic per 100 Grams.	Results of Analysis. —	No. of Sample.
DISTRICT OF QUEBEC—E. BELAND, INSPECTOR—*Concluded.*										
1909.										
Dec. 1	Borax	36660	J. M. Ouillet, St. Anselme	1 lb	15	Carrier fils, Levis		0·4	Milligrams	36660
" 1	"	36661	Urbain Roy, St. Anselme	1 "	15	"		None		36661
" 1	"	36662	J. B. Cadaret, St. Anselme	1 "	15	Whitead & Turner, Quebec		"		36662
" 2	"	36663	C. E. Royer, St. Claire	1 "	13	Lemieux fils, Quebec		"		36663
" 4	"	36664	Venerand Allaire, St. Leon de Standon.	1 "	15	Unknown		"		36664
" 4	"	36665	O. Gagnon, St. Leon de Standon.	1 "	30	Dr. Ed. Morin, Quebec		"		36665
" 7	"	36666	William Bernard, St. Rose	1 "	15	Unknown		"		36666
DISTRICT OF ST. HYACINTHE—J. C. ROULEAU, INSPECTOR.										
Dec. 6	Borax	38849	Alf. Plante, Sorel	2 pkts.	10	Pugsley, Digman & Co., Toronto.		None		38849
" 6	"	38850	R. Duguay & Cie, La Bai	1 lb	10	Hudson & Orsali, Montreal		"		38850
" 7	"	38851	C. Langlois, Vercheres	1 "	14	L. Chaput fils & Cie, Montreal.		"		38851
" 9	"	38852	G. L. Elmes, Farnham	2 pkgs	14	The R. Creig Co., Ltd., Toronto.	'White Swan'	"		38852
" 20	"	38853	A. McLean & Middle Bros., Danville.	3 "	15	Lymans Ltd., Montreal		"		38853
" 20	"	38854	H. Roux, Danville	2 "	20	The Alph. Chem. Co., Berlin	Moody's reliable powdered borax compound.	"		38854*
" 20	"	38855	P. J. Girard, Richmond	2 "	20	The Pure Gold Mfg. Co., Toronto.	Guaranteed pure by manufacturer.	"		38855

"	21	"	38856	Gosselin & Paradis, Magog	1 lb	10	Hudon, Herbert & Cie, Montreal.			"			38856
"	23	"	38857	D. Gagnon, St. Hyacinthe	3 pkgs	15	Pugsley, Dingman & Co., Ltd., Toronto,			"			38857
"	23	"	38858	P. Racine, St. Hyacinthe	3 "	15	Bee Starch Co., Montreal	B. Brand 99 p.c. pure		"			38858

DISTRICT OF MONTREAL—J. J. COSTIGAN, INSPECTOR.

Dec.	10	Borax	40361	Dr. Gauthier, Valleyfield	1 lb	20	Lymans, Ltd.			None			40361
"	10	"	40362	Dr. J. E. St. Onge, Valleyfield	1 "	25				"			40362
"	10	"	40363	J. E. H. Quipp, Windsor St., Montreal.	1 "	20				"			40363
"	10	"	40364	A. Lebeau, 549 St. James St., Montreal.	3 pkts.	40	The Fielding Chem. Co., Ltd., Guelph, Ont.			"			40364
"	16	"	40365	Z. Gilbert, St. Jerome, P.Q.	1 lb	20	Lyman, Knox Co., Ltd., Montreal.			"			40365
"	16	"	40366	Dr. Fournier, St. Jerome, P.Q	1 "	25	Nat. Drug & Chem. Co.			"			40366
"	21	"	40367	James Fortune, Huntingdon, P.Q.	3 pkts.	30	Nat. Drug & Chem. Co., Ltd			"			40367
"	21	"	40368	" "	1 lb	20		Crystals		"			40368
1910.													
Jan.	10	"	40369	M. Albert, 971 St. Lawrence B., Montreal.	1 "	15	Unknown			"			40369
"	10	"	40370	Lanctot & Brault, 820 St. Lawrence B., Montreal.	1 "	15	A. Filion, Montreal			"			40370

DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR.

1909.													
Dec.	3	Borax	42836	N. W. Campbell, Ottawa	1 lb	20	Ottawa Drug Co., Ottawa	'Powdered'		None			42836
"	3	"	42837	J. S. Brown, Ottawa	1 "	20	Nat. Drug & Chem. Co., Ltd., Ottawa.	"		"			42837
"	3	"	42838	W. F. Gibson, Ottawa	1 "	20	Unknown	Crystals		"			42838
"	4	"	42839	G. F. Brethour, Ottawa	1 "	20	Nat. Drug & Chem. Co., Ltd., Ottawa.	"		"			42839
"	6	"	42840	F. W. Day, Ottawa	1 "	20	Lymans, Ltd., Montreal	Powdered		"			42840
"	11	"	42841	G. E. Moore, Carleton Place	1 "	20	Nat. Drug & Chem. Co., Ltd., Ottawa.	Crystals		"			42841
"	14	"	42842	A. D. Maclennan, Kemptville	1 "	20	Lyman Sons & Co., Montreal	Powdered		"			42842

*Contains Carbonate of Soda.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report (Is not an expression of opinion).	Results of Analysis. Arsenic per 100 Grams.	Results of Analysis. —	No. of Sample.
DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR—*Concluded.*										
1909.										
Dec. 15	Borax	42843	C. H. Lewis, Ottawa	1 lb.	12	Nat. Drug & Chem.Co.,Ltd., Ottawa.	Crystals	None		42843
" 16	"	42844	J. A. Johnston, Smith's Falls.	1 "	20	Unknown	Powdered	0·5	Milligrams.	42844
" 17	"	42845	G. A. Aikin, Finch	1 "	15	Nat. Drug & Chem.Co.,Ltd., Ottawa.	Crystals	None		42845
DISTRICT OF KINGSTON—JAS. HOGAN, INSPECTOR.										
Nov. 29	Borax	42752	Nat. Drug Co., Kingston	1 lb.	10	Unknown		None		42752
" 29	"	42753	A. P. Chown, Kingston	1 "	15	H. Skinner Co., Kingston		"		42753
" 29	"	42754	C. S. Pronse, Kingston.	1 "	20	Unknown		"		42754
" 29	"	42755	G. Mahood, Kingston	1 "	15	Nat. Drug Co.		"		42755
" 29	"	42756	T. L. Best, Kingston	1 "	20	Unknown		"		42756
Dec. 1	"	42757	D. Bleeker, Belleville	1 "	15	"		"		42757
" 1	"	42758	W. H. A. Semple, Cobourg	1 "	15	E. G. West, Toronto		"		42758
" 1	"	42759	H. Mitchell, Port Hope	1 "	15	Lyman, Montreal		"		42759
" 2	"	42760	W. Madill, Peterboro	1 "	15	Unknown		"		42760
" 2	"	42761	Nugent Drug Co., Peterboro.	1 "	15	Drug Trading Co., Toronto		"		42761

DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.

Dec.	1	Borax	41401	H. Poehlman, Collingwood	1 lb.	10	Young Winfield, Ltd., Hamilton.	Labelled Young's Improved pure Borax.	None			41401
"	2	"	41402	J. H. Brown, Thornbury	1 "	10	McLaren's, Ltd., Hamilton	McLaren's invincible quality Borax the highest grade obtainable.	"			41402
	2	"	41403	Geo. Dyce & Co., Meaford	1 "	10	The F. F. Dalley Co., Ltd., Hamilton.	Dalley's Chemically pure borax.	"			41403
	3	"	41404	W. J. Ward, Owen Sound	1 "	10	Canada Spice & Grocery Co., Ltd., London, Ont.	'Crest' brand	"			41404
	6	"	41505	The Hennessey Drug Stores, Ltd., Hamilton.	1 "	10	The Nat. Drug & Chem. Co., Ltd., Hamilton.		"			41405
	7	"	41406	Reliable Drug Stores, Dunville	1 "	15	The Nat. Drug & Chem. Co., Ltd., Hamilton.		"			41406
	7	"	41407	F. J. Brown, Port Colborne	1 "	15	The Dom. Drug Co., Ltd., Hamilton.		0·4	Milligrams		41407
	7	"	41408	Chas. Collins, Welland	1 "	20	The Lyman Bros. Co., Ltd., Toronto.		None			41408
	20	"	41409	W. F. Cantelon, Toronto	1 "	10	Drug Trading Co., Ltd., Toronto.		"			41409
	20	"	41410	J. W. Struthers, Toronto	1 "	15	Drug Trading Co., Ltd., Toronto.		"			41410

DISTRICT OF LONDON—T. KIDD, INSPECTOR.

Dec.	6	Borax	30867	J. Burgardos, Guelph	1 lb.	20	Nat. Drug. Co., Toronto		0·5	Milligrams		30867
	6	"	30869	Beattie & Co., Guelph	3 pks.	15	Winer & Co., Hamilton		None			30869
	7	"	30873	Mr. Petrie, Guelph	3 "	15	McArthur Cornell & Co., Montreal.		"			30873
	8	"	30878	Roose Pharmacy, Berlin	1 lb.	20	Unknown		"			30878
	9	"	30879	J. A. Monteth & Co., Stratford	3 pks.	30	McLaren's, Hamilton		"			30879
	9	"	30880	Barnsdale & Co., Stratford	3 "	15	Canada Spice & Grocery Co., London, Ont.		"			30880
	9	"	30884	McCulla & Hank, Stratford	¾ lb.	15	F. F. Dalley Co., Hamilton.		"			30884
	11	"	30890	Mathew Williams, Seaforth	3 pks.	15	Lyon Spice Co., London		"			30890
	11	"	30891	Chas. Aberhart, Seaforth	1 lb.	20	Lyman Bros., Toronto.		"			30891
	16	"	44703	Michael Klinghamer, Dublin	¾ "	15	Gorman & Eckart, London		"			44703

BULLETIN No. 202—BORAX—EXAMINATION FOR ARSENIC.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).	Results of Analysis. Arsenic per 100 Grams.	Results of Analysis. —	No. of Sample.
DISTRICT OF WINDSOR—JNO. TALBOT, INSPECTOR.										
1909.										
Dec. 6	Borax	42656	J. E. Richards & Co., Aylmer, Ont.	1 lb.	20	Nat. Drug Co., Hamilton.		None		42656
" 6	"	42657	Ern. A. Campbell, Aylmer, Ont.	1 "	20	Saunderson & Percy, Toronto		"		42657
" 6	"	42661	McDonald's Drug Store, Tillsonburg.	1 "	20	Nat. Drug Co		"		42661
" 8	"	42670	J. Austin & Co., Simcoe	1 "	15	Nat. Drug Co., Hamilton		1·0	Milligrams	42670
" 8	"	42673	E. H. Jackson, Simcoe	1 "	20	Unknown		0·5	"	42673
" 9	"	42676	H. E. Perrott, Brantford	1 "	10	"		None		42676
" 9	"	42681	Milton H. Robertson, Brantford.	1 "	15	G. Foster & Son, Brantford		0·2	Milligrams	42681
" 10	"	42689	W. R. Venning, London	1 "	20	Nat. Drug. Co., London		0·5	"	42689
" 10	"	42690	T. N. Sunner, London	1 "	15	" "		None		42690
" 10	"	42691	Anderson & Nelles, London	1 "	20	" "		0·4	Milligrams	42691
DISTRICT OF MANITOBA—A. C. LARIVIERE, INSPECTOR.										
Dec. 21	Borax	39841	T. T. Malcolm, Dauphin	1 lb.	20	Martin Bole Wynne Co., Winnipeg.		None		39841
" 21	"	39842	The Red Cross Pharmacy, Dauphin.	1 "	20	Unknown		"		39842
" 21	"	39843	W. H. Morrison, Dauphin	1 "	15	The Bole Drug Co., Winnipeg		"		39843

"	22	"	39844	The Lincoln Park Drug Co., Winnipeg.	1 "	15	Unknown		"			39844
"	22	"	39845	Gillespie & Campbell, Winnipeg.	1 "	25	"		"			39845
"	23	"	39846	Gibbs Drug Store, Selkirk	1 "	15	Winer & Co., Hamilton		"			39846
"	23	"	39847	R. H. Gilhuly, Selkirk	1 "	15	Unknown		"			39847
"	28	"	39848	S. S. Smith, Souris	1 "	15	"		"			39848
"	28	"	32849	The Morton Drug Co., Souris.	1 "	20	The Bole Drug Co., Winnipeg		"			39849
"	29	"	39850	D. E. Clements Drug Store, Brandon.	1 "	20	Unknown		"			39850

DISTRICT OF CALGARY—R. W. FLETCHER, INSPECTOR.

Dec.	10	Borax	43601	B. F. Souch, Medicine Hat	1 lb.	20	Nat. Drug and Chem. Co., Hamilton.		None			43601
"	10	"	43602	E. M. Cawker, Medicine Hat	1 "	25	Unknown		"			43602
"	11	"	43603	C. S. Pringle, Medicine Hat	1 "	20	Lyman & Sons, Montreal		"			43603
"	16	"	43604	McCutcheon & McGill, Calgary.	1 "	20	Martin Bole Wynne, Winnipeg.		"			43604
"	16	"	43605	C. A. Wallace, Calgary	1 "	20	Unknown		"			43605
"	30	"	43606	Higinbotham & Co., Lethbridge.	1 "	20	"		0·5	Milligrams		43606
"	30	"	43607	Alberta Drug and Bk. Co., Lethbridge.	1 "	20	"		None			43607
1910.												
Jan.	4	"	43608	D. W. MacDonald Drug Co., Edmonton.	1 "	20	"		"			43608
"	4	"	43609	C. H. Graydon Drug Store, Edmonton.	1 "	20	Lyman's, Ltd., Montreal		"			43609
"	4	"	43610	A. Archibald, Edmonton	1 "	20	" "		"			43610

DISTRICT OF VANCOUVER—J. F. POWER, INSPECTOR.

1909.													
Dec.	8	Borax	37768	McDowell Atkins Watson Co., Vancouver.	1 lb	25	Henderson Bros., Vancouver.		None			37768
"	8	"	37769	Red Raven Drug Store, Vancouver.	1 "	35	" "		"			37769

BULLETIN No. 202—BORAX—EXAMINATION FOR ARSENIC.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).	Results of Analysis. Arsenic per 100 Grams.	Results of Analysis. —	No. of Sample.
DISTRICT OF VANCOUVER—J. F. POWER, INSPECTOR—*Concluded.*										
1909.										
Dec. 8	Borax	37770	Nelson's Drug Store, Vancouver.	1 lb	25	Henderson Bros., Vancouver		None		37770
" 8	"	37771	W. E. Law, Vancouver	1 "	25	" "		"		37771
" 8	"	37772	W. Ferguson & Co., Vancouver	1 "	30	" "		"		37772
" 8	"	37773	McDuffie Bros., Vancouver	1 "	25	" "		"		37773
" 8	"	37774	Red Cross Drug Store, Vancouver.	1 "	35	" "		"		37774
" 8	"	37775	Henderson Bros., Ltd., Vancouver.	1 "	15	" "		"		37775
" 8	"	37776	W. E. Law, Vancouver	1 "	20	" "		"		37776
" 8	"	37777	E. Shoff, Vancouver	1 "	20	" "		"		37777
DISTRICT OF VICTORIA—D. O'SULLIVAN, INSPECTOR.										
Dec 17	Borax	41619	Wm. Jackson & Co., Victoria, B.C.	1 lb	25	Henderson Bros., Ltd., Victoria, B.C.		None		41619
" 17	"	41620	D. E. Campbell, Victoria, B.C.	1 "	25	Lyman's, Ltd., Montreal		"		41620
" 17	"	41621	W. S. Terry, Victoria, B.C.	1 "	25	" "	Pure powdered borax	"		41621
" 17	"	41622	Hall & Co., Victoria, B.C.	1 "	25	Henderson Bros., Ltd., Victoria, B.C.		0·5	Milligrams	41622

"	20	"	41623	Cyrus H. Bower, Victoria, B.C.	1	"	25	Lyman & Sons, Ltd., Montreal.		None	41623
"	20	"	41624	B. C. Drug Co., Ltd., Victoria, B.C.	1	"	25	Henderson Bros., Ltd., Victoria, B.C.		0·2 Milligrams	41624
"	20	"	41625	Dean & Hiscocks, Victoria, B.C.	1	"	25	" "		None	41625
"	20	"	41626	F. J. Williams, Victoria, B.C.	1	"	25	" "		"	41626
"	20	"	41627	Thos. Shotbolt, Victoria, B.C.	1	"	25	Lyman's, Ltd., Montreal		"	41627
"	20	"	41628	Henderson Bros., Ltd., Victoria, B.C.	1	"	25	Henderson Bros., Ltd., Victoria, B.C.		"	41628

APPENDIX X.

BULLETIN No. 203—PEPPER.

OTTAWA, March 21, 1910.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I beg to hand you herewith a report upon two hundred and eighty (280) samples of pepper, collected throughout Canada in September and October of last year.

The results may be summarized thus :—

—	Black Pepper.	White Pepper.	Total.
Genuine	100	104	204
Doubtful	15	11	26
Adulterated	25	24	49
Lost	—	1	1
Total	140	140	280

Of those samples designated as *doubtful* it is fair to say that, the small amounts of foreign matter found in most of them may be due to causes for which the manufacturer is not to blame. It is quite a usual thing for vendors to refill their containers before these are entirely emptied of stock which may have had another origin, and be of a different quality, from that last placed in them. And again, most spice grinders utter different grades of pepper, and the accidental or unintentional inter-mixture of a lower grade article is made possible by the use of the same mill, sieves, &c., in manufacture.

It will be noted that none of these samples are sold as *Compound*, although one vendor (No. 42620) is unwilling to guarantee his goods as pure.

Pepper continues to be the most extensively adulterated spice on the market. It is further to be noted that in certain districts of Canada, this spice appears to be much more largely adulterated than in others. This fact is well brought out in the following table, which summarizes the results of inspection of pepper, since 1876 :—

The inspectoral districts of Ottawa and Windsor, which were created in 1905 and 1907 respectively, do not appear in the above.

The following synopsis presents very concisely the results of examination of pepper for the whole period from 1877 to 1910, for each of the inspectoral districts of Canada :—

INSPECTION OF PEPPER, 1876 TO 1910 [1]

Year.	District of Nova Scotia.		District of Quebec.		District of Montreal.		District of Toronto.		District of New Brunswick.		District of London.		District of Manitoba.	
	Examined.	Adulterated.	Examined.	Adulterated.	Examined.	Adulterated.	Examined.	Adulterated.	Examined.	Adulterated.	Examined.	Adulterated.	Examined.	Adulterated.
1876 & 1877[2]	6	4	6	5	16	16	8	5	.....	.....	.....	.....	.....	.....
1878	6	5	6	3	16	15	12	5	.....	.....	.....	.....	.....	.....
1879	8	4	11	5	15	9	10	4	.....	.....	.....	.....	.....	.....
1880	8	2	8	1	8	1	9	5	9	9	.....	.....	.....	.....
1881	7	3	7	0	11	11	11	9	9	7	.....	.....	.....	.....
1882	4	1	5	4	12	10	10	5	12	10	.....	.....	.....	.....
1883	8	3	2	1	11	10	4	2	5	5	2	0	.....	.....
1884	1	1	2	0	8	7	3	1	6	4	4	4	.....	.....
1885[3]	12	3	2	0	18	10	23	15	6	5	5	4	2	2
1886[4]	4	1	5	4	4	3	4	4	4	2	4	2	.....	.....
1888	10	6	8	8	10	7	10	6	8	5	.....	.....	8	4
1890[5]	.....	.....	25	11	38	26	10	1	.....	.....	.....	.....	.....	.....
1891	.....	.....	23	10	30	21	.....	.....	.....	.....	.....	.....	.....	.....
1894	.....	.....	10	3	10	8	10	1	8	5	8	2	8	2
1896	15	4	15	6	17	10	15	1	13	2	13	1	12	2
1899	.....	.....	.....	.....	.....	.....	10	2	.....	.....	.....	.....	.....	.....
1900	10	1	10	4	.....	.....	10	0	.....	.....	9	5	10	0
1904[6]	10	1	18	12	19	19	17	13	7	3	11	6	10	1
1905[7]	7	0	.....	.....	12	8	12	4	7	3	10	3	7	4
1905[8]	24	1	23	17	24	12	24	6	24	10	24	6	25	11
1908[9]	20	1	23	9	20	9	20	2	20	5	18	3	20	8
1910[10]	20	1	20	8	20	5	20	7	20	1	20	1	20	1
Total for period of 34 years	180	42	229	111	319	217	250	98	158	76	128	37	122	35

[1] In some of the earlier years a few samples of cayenne (red pepper) are included in these numbers.
[2] The first year in which the Adulteration Act was enforced.
[3] The first Chief Analyst (Mr. Evans) appointed.
[4] Mr. Macfarlane appointed Chief Analyst.
[5] Bulletin No. 20. [6] Bulletin No. 95. [7] Bulletin No. 103.
[8] Bull. No. 106. [9] Bull. No. 165. [10] Bull. No. 203.

INSPECTION OF PEPPER, 1876 TO 1910.

Year.	District of Kingston.		District[11] of British Columbia.		District of Prince Edward Island.		District of Calgary.		District of St. Hyacinthe		Canada.	
	Examined.	Adulterated.	Examined.	Adulterated.	Examined.	Adulterated.	Examined.	Adulterated.	Examined.	Adulterated.	Examined.	Adulterated.
1876 & 1877[2]	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	36	30
1878	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40	28
1879	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	44	22
1880	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	42	18
1881	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45	30
1882	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	43	30
1883	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	32	21
1884	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	24	17
1885[3]	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	68	39
1886[4]	4	4	.....	.....	.....	.....	.....	.....	.....	.....	29	20
1888	8	7	.....	.....	.....	.....	.....	.....	.....	.....	62	43

[11] Includes inspectoral districts of Vancouver and Victoria.
[12] The inspectoral districts of Ottawa and Windsor, created in 1905 and 1907, are not included.

INSPECTION OF PEPPER, 1876 TO 1910—*Concluded.*

Year.	District of Kingston.		District[11] of British Columbia.		District of Prince Edward Island.		District of Calgary.		District of St. Hyacinthe.		Canada.	
	Examined.	Adulterated.	Examined.	Adulterated.	Examined.	Adulterated.	Examined.	Adulterated.	Examined.	Adulterated.	Examined.	Adulterated.
1890[5]	...	...	...	...	...	...	...	...	...	...	73	38
1891	...	...	...	...	...	...	...	...	...	...	53	31
1894	8	8	...	...	...	...	...	...	...	...	62	29
1896	13	5	...	...	...	...	...	...	...	...	113	31
1899	...	...	...	...	...	...	...	...	...	...	10	2
1900	9	4	8	1	...	...	...	...	...	...	66	15
1904[6]	14	4	12	6	6	1	6	6	...	...	130	72
1905[7]	10	4	8	4	2	0	1	1	10	10	86	41
1905	24	11	24	9	26	7	24	8	24	18	290	117
1908	20	4	40	3	20	4	20	3	20	12	261	63
1910	20	4	40	1	–	–	20	1	20	10	240	40
	130	55	132	24	54	12	71	19	74	50	1859	777

	District of Ottawa.		District of Windsor.	
	Examined.	Adulterated.	Examined.	Adulterated.
1908 (Bull. 165)	20	4	17	1
1910 (Bull. 203)	20	4	20	4
	40	8	37	5

FROM 1877 TO 1910.

Inspectoral Districts.	Date of first Inspection.	Total samples examined.	Found Adulterated.	Percentage of Adulteration.
Nova Scotia	1877	180	42	23
Prince Ed. Island	1904	54	12	22
New Brunswick	1880	158	76	48
Quebec	1877	229	111	49
St. Hyacinthe	1905	74	50	65
Montreal	1877	319	217	68
Ottawa	1908	40	8	20
Kingston	1886	130	55	43
Toronto	1877	250	98	39
London	1883	128	37	29
Windsor	1908	37	5	14
Manitoba	1877	122	35	29
Calgary	1904	71	19	27
Vancouver, Victoria	1900 / 1900	132	24	19
Total	...	1924	789	40

It will be noted that the average adulteration of pepper throughout Canada for the above period of 33 years, is 40 per cent. this is much exceeded in the districts of St. Hyacinthe and Montreal.

The only adulterations which can be made a basis for judging pepper, at present, are the admixture of pepper with foreign matters, and excessively high ash, which itself means the presence of mineral matter (dirt) in excess of a standard proposed by me in 1890 (See Bulletin 20). The standard was derived from original work on pepper, and from a study of all the available literature of the subject; as explained in Bull. 20. The standard rests however, upon a scientific rather than upon a legal basis; and would have to be established by evidence in the event of a contested case in the courts. It is hoped that this state of things will be improved by the legalizing of Spice Standards and limitations of variability under section 23 of the Adulteration Act, before another inspection of pepper is made. Of the present collection, 18 samples contain more than 7 per cent, of ash, and are adjudged to be adulterated on this account.

I beg to recommend the publication of this report as Bulletin No. 203.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

BULLETIN No. 203—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
DISTRICT OF NOVA SCOTIA—						
1909.						
Oct. 5	White Pepper..	41826	Forristall & Co., Halifax, N.S.	8 oz..	20	Wentzell's, Ltd., Halifax, N.S.
" 5	" ..	41827	W. J. Hopgood & Son, Halifax, N.S.	3 pks.	30	W. H. Schwartz & Sons, Halifax, N.S.
" 5	" ..	41828	Dillon Bros., Halifax, N.S....	3 " .	15	Jno. P. Mott & Co., Halifax, N.S.
" 6	" ..	41829	J. F. Crowe & Co., Halifax, N.S.	3 " .	10	W. H. Schwartz & Sons, Halifax, N.S.
" 6	" ..	41830	Jno. P. Mott & Co., Halifax, N.S.	3 " .	....	Vendors..... ...
" 6	" ..	41831	G. A. Cook & Co., Halifax, N.S.	8 oz..	20	Todhunter & Mitchell, Toronto.
" 8	" ..	41832	Murphy & Demont, Windsor, N.S.	3 pks.	30	Nat. Drug Co., Halifax. ....
" 11	" ..	41833	The 2 Barkers, Ltd., Amherst, N.S.	8 oz..	18	Gardiner, Dunn & Co., Hamilton.
" 12	" ..	41834	Black & Co., Truro, N.S.....	8 " .	11	C. H. Cochrane & Co., Ottawa
" 12	" ..	41835	Ryan Bros., Truro, N.S.....	3 pks.	24	F. F. Dalley Co., Ltd., Hamilton.
DISTRICT OF NEW BRUNSWICK—						
Sept. 8	White Pepper..	39553	G. E. Barbour Co., Ltd., St. John, N.B.	½ lb ..	14	Vendors..... ....
" 14	" ..	39554	W. A. Porter, St. John, N.B..	½ " ..	20	Todhunter, Mitchell & Co., Toronto.
" 21	" ..	39555	H. C. Jewett, Fredericton, N.B.	½ " ..	20	" " ..
" 22	" ..	39556	R. E. Holyoke, Woodstock, N.B.	½ " ..	20	Dearborn & Co., St. John, N.B.
" 24	" ..	39557	J. T. Baird Co., Ltd., Perth, N.B.	3 pks.	30	" " ..
Oct. 5	" ..	39558	Sussex Mercantile Co., Ltd., Sussex, N.B.	½ lb ..	20	" " ..
" 6	" ..	39559	F. P. Reid & Co., Moncton, N.B.	3 pks.	24	Vendors.. .. ..
" 7	" ..	39560	Baird & Peters, Newcastle, N.B.	3 " .	25	Jno. P. Mott & Co., Halifax.
" 7	" ..	39561	Miller Bros., Newcastle, N.B..	½ lb ..	20	Baird & Peters, St. John, N.B.
" 11	" .	39562	Moores Bros., Campbellton, N.B.	3 pks.	30	The F. F. Dalley Co., Ltd., Hamilton.

* Lost in transit.

SESSIONAL PAPER No. 14

PEPPER.

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.					No. of Sample.	Remarks and opinion of the Chief Analyst.
	Water Soluble.	Ash per cent. Total.	Soluble in Hydrochloric Acid.	Insoluble in Hydrochloric Acid (Sand).	Microscopical Examination.		
R. J. WAUGH, INSPECTOR.							
	p. c.	p. c.	p. c.	p. c.			
		0·90			Pepper tissues only	41826	Genuine.
		1·06			"	41827	"
		1·64			"	41828	"
		1·14			"	41829	"
		1·00			"	41830	"
		0·96			"	41831	"
		1·00			"	41832	"
		1·66			About 35 per cent wheat flour present.	41833	Adulterated.
		1·26			Pepper tissues only	41834	Genuine.
		1·04			Trace of wheat starch present	41835	Doubtful.
J. C. FERGUSON, INSPECTOR.							
'Acorn' brand		0·66			Pepper tissues only	39553	Genuine.
		1·00			"	39554	"
		0·80			"	39555	"
Labelled absolutely pure white pepper.		2·06			"	39556	"
" "		1·46			"	39557	"
		*				39558	
'Pyramid' brand		4·90			Pepper tissues only	39559	Genuine.
Guaranteed absolutely pure. Mott's strictly pure white pepper.		1·10			"	39560	"
		1·04			"	39561	"
Dalley's pure ground white pepper.		1·10			"	39562	"

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
						DISTRICT OF QUEBEC—
1909.						
Sept. 9	White Pepper..	36622	N. Ferron, St. Paulin	½ lb ..	13	Chevalier & Pouliot, Joliette.
" 9	" .	36623	S. Guimond, St. Paulin.....	½ " ..	18	" " ..
" 9	" ..	36624	Thos. Juneau, St. Paulin.....	½ " ..	13	Chaput fils & Cie, Montreal..
" 9	" ..	36625	A. J. Thibaudeau, St. Paulin..	½ " ..	18	Hudon & Aslin, Montreal....
" 9	" ..	36626	H. Abram, St. Paulin.....	½ " ..	15	.. ..
" 9	" ..	36627	S. Vaillet, St. Paulin..	½ " ..	20	Hudon & Hebert, Montreal..
" 9	" ..	36628	A. Tramblay, St. Alexis	½ " ..	20	....
" 9	" ..	36629	Andre Dho, St. Alexis.....	½ " ..	20	L. Chaput fils & Co., Montreal
" 9	" ..	36630	J. V. Milot, St. Alexis.... ..	½ " ..	20	" " ..
" 9	" ..	36631	A. Robert, St. Alexis	½ " ..	20	" " ..
						DISTRICT OF ST. HYACINTHE—
Sept. 15	White Pepper ..	1217	J. V. Montplaisir, Drummondville.	3 pks.	25	The Brodies Mfg. Co., Montreal.
" 15	" ..	1218	Ant. Chicoine, Actonvale.	½ lb ..	18	Unknown ....
" 16	" ..	1219	J. S. McGuire, Waterloo.....	½ " ..	15	" ... .
" 17	" ..	1220	F. X. Giroux, Farnham.....	½ " .	15	Herron Leblanc, Ltd .....
" 17	" ..	1221	Gervais & freres, St. Jean. ...	½ " ..	15	Banqueroute de Bechard, de L'Acadia.
" 22	" ..	1222	E. Huard, Lac Megantic.....	½ " ..	17	L. Chaput fils & Co., Montreal.
" 22	" ..	1223	P. A. Barbeau, Cookshire.....	½ " ..	13	Unknown .. ..
" 23	" .	1224	T. M. Bachelder & Co., Magog	½ " ..	15	" . .....
" 24	" ..	1225	B. J. Smith, Coaticook	½ " ..	20	Herron, Leblanc, Montreal..
" 24	" ..	1226	Theriault & Leclerc, Sherbrooke.	½ " ..	20	C. H. Cochrane & Co., Ottawa
						DISTRICT OF MONTREAL—
Sept. 7	White Pepper ..	40326	A. Charlebois, Valleyfield.....	½ lb ..	20	Hudon & Orsali, Montreal...
" 10	" ..	40327	Paquette et freres, Berthierville	½ " ..	20	....
" 14	" ..	40328	P. L. Michaud, St. Gabriel de Brandon.	½ " ..	13	Wolf, Sayer & Heller, Montreal.

SESSIONAL PAPER No. 14

PEPPER.

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.						Remarks and opinion of the Chief Analyst.
	Water Soluble.	Ash per cent. Total.	Soluble in Hydrochloric Acid.	Insoluble in Hydrochloric Acid (Sand).	Microscopical Examination.	No. of Sample.	
E. BELAND, INSPECTOR.							
	p. c.	p. c.	p. c.	p. c.			
	....	8·86	8·16	0·70	Trace of wheat starch present	36622	Ash high. Adulterated.
	.....	1·74	....	.....	Pepper tissues only.....	36623	Genuine.
	.....	4·70	.....	.....	"	36624	Apparently a blk pepper. Genuine
	.....	2·36	.....	.....	"	36625	Genuine.
	.....	1·80	.....	.....	About 25 per cent wheat flour with a little maize.	36626	Adulterated.
	.....	2·40	.....	....	About 20 per cent maize with some cayenne tissues.	36627	"
	... .	2·00	. ...	.....	About 30 per cent wheat and maize flour.	36628	"
	...	1·10	.....	.....	Pepper tissues only.....	36629	Genuine.
	.....	1·00	.. ..		"	36630	"
	.....	0·94	....		Trace of foreign starch present	36631	Doubtful.
J. C. ROULEAU, INSPECTOR.							
	. .	3·24	.....	...	About 60 per cent wheat and maize flour. Perhaps cayenne.	1217	Adulterated.
	.....	0·92	.....	.....	Pepper tissues only.....	1218	Genuine.
	.....	1·10	. ...	... ..	"	1219	"
	.....	2·20	...	.....	About 25 per cent wheat flour	1220	Adulterated.
	.....	2·24	.....	....	Stone cells in excess. Probably from husks or cocoanut shells.	1221	"
	.....	1·00	....	.....	Pepper tissues only.....	1222	Genuine.
	.. ..	1·70	.....	.....	Stone cells in excess. Probably from olive stones.	1223	Adulterated.
	.....	1·84	.. ...	... ...	Pepper tissues only.....	1224	Genuine.
	.....	1·74	. ..	....	About 20 per cent wheat flour	1225	Adulterated.
Pure white pepper	.....	1·04	.....	.....	Pepper tissues only.....	1226	Genuine.
J. J. COSTIGAN, INSPECTOR.							
Pure ground white pepper.	.. ...	1·64	.....	.....	Pepper tissues only.....	40326	Genuine.
	....	0·78	.. ...	.....	"	40327	"
	.....	1·30	.....	.....	"	40328	"

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
						DISTRICT OF MONTREAL—
1909.						
Sept. 22	White Pepper ..	40329	Z. Jacques, Terrebonne.	½ lb ..	16	Kearney Bros., Montreal....
" 16	" ..	40330	A. Chalmers, Huntingdon.....	½ " ..	18	Pure Gold Co.....
" 21	" ..	40331	Arthur Roy, Longueuil.....	½ " ..	20	Dom. Spice Co. .....
" 22	" ..	40332	Jos. Landry, 682 St. James St., Montreal.	½ " ..	18	Laporte, Martin & Co., Ltd..
" 29	" ..	40333	D. A. Duclos, St. Rose, P.Q..	½ " ..	20	L. Chaput fils & Cie .....
" 29	" ..	40334	W. Chatrand, St. Rose, P.Q..	½ " ..	18	....
" 20	" ..	40335	The European Tea and Coffee Co., St. Rose, P Q.	½ " ..	15	Unknown.. .....
						DISTRICT OF OTTAWA—
Sept. 22	White Pepper ..	42801	Cameron & Downing, Vankleek Hill.	½ lb ..	20	Pure Gold Mfg. Co., Ltd., Toronto.
" 24	" ..	42802	J. E. Cook, Winchester.....	½ " ..	20	Unknown.... .....
" 25	" ..	42803	J. T. Conway, Perth.....	½ " ..	20	Pure Gold Mfg. Co., Ltd., Toronto.
" 27	" ..	42804	A. Villeneuve, Gatineau Point.	½ " ..	20	Unknown..... .....
" 28	" ..	42805	Miss Bennett, Spencerville....	½ " ..	17	" ....
" 29	" ..	42806	D. J. McDonald, Alexandria..	½ " ..	20	" ....
Oct. 4	" ..	42807	A. S. Russell, Galetta.....	½ " ..	20	Jas. Turner & Co., Hamilton
" 4	" ..	42808	D. B. Eastman, Kinburn.....	½ " ..	20	White Swan Co., Toronto. ..
" 5	" ..	42809	Mrs. W. Alexander, Ottawa...	½ " ..	20	H. N. Bate & Sons, Ottawa..
" 5	" ..	42810	J. Polowin, Ottawa.....	½ " ..	20	" " ..
						DISTRICT OF KINGSTON—
Sept. 7	White Pepper ..	42716	H. M. Stover, Kingston.....	½ lb ..	20	Maclean, Kingston. .....
" 7	" ..	42717	C. S. Litton, Kingston.....	½ " ..	20	Cochrane, Ottawa ... .
" 7	" ..	42718	J. Cullan, Kingston.....	½ " ..	20	Unknown..... . ...
" 7	" ..	42719	C. Saunders, Kingston.....	½ " ..	20	" ....
" 7	" ..	42720	C. Pickering, Kingston	½ " ..	20	Lowes, Toronto..... ...
" 7	" ..	42721	Anderson Bros., Kingston. ...	½ " ..	20	Hamilton Spice and Coffee Co., Hamilton.

SESSIONAL PAPER No. 14

PEPPER.

Inspector's Report. (Is not an expsession of opinion).	Results of Analysis.					No. of Sample.	Remarks and opinion of the Chief Analyst.
	Water Soluble.	Ash per cent. Total.	Ash per cent. Soluble in Hydrochloric Acid.	Ash per cent. Insoluble in Hydrochloric Acid (Sand).	Microsopical Examination.		
J. J. COSTIGAN, INSPECTOR—*Concluded.*							
	p. c.	p. c.	p. c.	p. c.			
	....	1·04	.....	.....	Trace of foreign starch present.	40329	Doubtful.
	....	1·10	.....	.....	Pepper tissues only..	40330	Genuine.
	....	1·56	.....	.....	Trace of foreign starch present.	40331	Doubtful.
	.....	1·26	.....	.....	Pepper tissues only..... ..	40332	Genuine.
	....	0·88	.....	.....	"	40333	"
	....	0·96	....	...	"	40334	"
	.....	1·36	.....	.....	About 25 per cent buckwheat flour.	40335	Adulterated.
J. A. RICKEY, INSPECTOR.							
	.....	0·84	.....	.....	About 5 per cent wheat flour present.	42801	Doubtful.
	....	0·90	.....	.....	Pepper tissues only.....	42802	Genuine.
	....	1·30	.....	.....	Trace of foreign starch present.	42803	Doubtful.
	.....	1·58	.....	.....	About 50 per cent wheat flour. Starch granules deformed.	42804	Adulterated.
	.. ..	1·10	....	...	Pepper tissues only.....	42805	Genuine.
	....	1·70	...	.....	About 30 per cent maize and wheat flour.	42806	Adulterated.
	.....	1·74	.....	.....	Pepper tissues only.....	42807	Genuine.
	.... ..	0·90	.....	.....	"	42808	"
	.....	1·42	....	.....	About 20 per cent wheat flour.	42809	Adulterated.
	.....	1·00	....	.....	Trace of wheat starch present	42810	Doubtful.
JAS. HOGAN, INSPECTOR.							
	.....	1·02	.....	.....	Pepper tissues only..... ...	42716	Genuine.
	.....	1·20	.....	.....	"	42717	"
	.....	1·34	.....	.....	About 15 per cent wheat flour	42718	Adulterated.
	..	1·01	.....	.....	About 25 per cent wheat flour	42719	"
	....	1·04	.....	...	Pepper tissues only.....	42720	Genuine.
	.....	1·66	.....	.....	"	42721	"

BULLETIN No. 203—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
						DISTRICT OF KINGSTON—
1909.						
Sept. 7	White Pepper ..	42722	E. S. Suddard, Kingston ...	½ lb ..	20	Unknown..... .....
" 7	" ..	42723	Kirk & Lee, Kingston.....	½ " ..	20	McLaren's, Hamilton .....
" 8	" ..	42724	S. Fourt, Port Hope	½ " ..	20	Red Feather .....
" 8	" ..	42725	F. Rosevear, Port Hope.....	½ " ..	20	Lowes, Toronto. .....
						DISTRICT OF TORONTO—
Sept. 13	White Pepper...	41362	Mrs. Condy, Markham.....	½ lb..	20	G. S. Dunn Co., Hamilton...
" 14	" ..	41363	Gideon Vernor, Uxbridge.....	½ " .	20	Unknown..... .....
" 14	" ..	41364	Allan & Fulton, Beaverton....	½ " .	20	McLaren's, Ltd., Hamilton..
" 15	" ..	41365	Miss A. Robertson, Orillia....	½ " .	20	White Swan Spices & Cereals Ltd., Toronto.
" 16	" ..	41366	J. C. McMurty, Midland.....	½ " .	20	Jas. Turner & Co., Hamilton
" 16	" ..	41367	N. Belcourt, Penetang.....	½ " .	20	H. P. Echardt & Co., Toronto
" 17	" ..	41368	C. G. Strange, Barrie.....	½ " .	20	Unknown.... . ...
" 17	" ..	41369	R. F. Green & Son, Bradford..	½ " .	20	The White Swan Spices & Cereals, Ltd., Toronto.
" 25	" ..	41370	C. Fitzpatrick, Toronto.	½ " .	20	W. Dawson..... . ..
" 25	" ..	41371	J. Delaney, Toronto.....	½ " .	20	G. S. Dunn & Co., Hamilton.
						DISTRICT OF LONDON—
Sept. 13	White Pepper ..	30816	W. R. Butcher, St. Mary's....	½ lb..	20	Todhunter & Mitchell, Toronto.
" 15	" ..	30828	R. S. Jones, Stratford.....	½ " .	20	F. F. Dalley Co., Ltd., Hamilton.
" 15	" ..	30-31	Wm. Stoneman, Mitchell	½ " .	20	Unknown.....
" 16	" ..	30837	Chas. S. Andrews, Seaforth....	½ " .	20	Geo. Watt & Sons, Brantford
" 16	" ..	30840	Matt. Williams, Seaforth.....	½ " .	25	Unknown.....
" 20	" ..	30843	Peter Anderson, Guelph ...	½ " .	25	J. M. Lowes, Toronto.....
" 20	" ..	30846	Chas. Ewing, Goderich.....	½ " .	20	Canada Spice & Grocery Co., London, Ont.
" 21	" ..	30851	J. J. McEwin, Goderich	½ " .	20	Gorman & Eckert, London, Ont.
" 22	" ..	30859	Kerr & Bird, Winghan	½ " .	20	" "
" 27	" ..	30863	Geo. Williams, Guelph.. ...	½ " .	20	Balfour Smye & Co., Hamilton.

SESSIONAL PAPER No. 14

PEPPER.

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.					No. Sample.	Remarks and opinion of the Chief Analyst.
	Water Soluble.	Ash per cent. Total.	Soluble in Hydrochloric Acid.	Insoluble in Hydrochloric Acid (Sand).	Microscopical Examination.		
JAS HOGAN, INSPECTOR—*Concluded.*							
	p. c.	p. c.	p. c.	p. c.			
... .	.....	1·24	.. ..	.. ...	About 50 per cent wheat flour	42722	Adulterated.
... .	.....	1·08	.....	.....	Pepper tissues only.....	42723	Genuine.
....	.....	1 80	....	.....	"	42724	"
....	.....	0·74	.....	.....	"	42725	"
H. J. DAGER, INSPECTOR.							
'Bison' Brand	.....	1·24	.....	.... .	About 30 per cent wheat flour	41362	Adulterated.
Pure white pepper.....	.....	2·40	.....	.....	About 15 per cent buckwheat flour.	41363	"
Labelled white pepper..	.....	1·04	....	.....	Pepper tissues only.	41364	Genuine.
" " ..	.. ..	1·04	.....	.....	" "	41365	"
'Majestic' Brand. Guaranteed absolutely pure.	.....	1·48	.....	.. ..	" "	41366	"
Pure ground spice. Special white pepper pure	.....	1·34	.....	... ..	" "	41367	"
Pure white pepper.....	...	1·28	.....	.....	About 15 per cent wheat flour	41368	Adulterated.
Sample sold as white pepper.	.....	1 00	. ...	... .	Trace of wheat flour present..	41369	Doubtful.
'Bison' Brand	.....	2 06	.....	.....	Trace of wheat starch.....	41370	"
....	.....	1·20	.....	...	About 5 per cent wheat flour	41371	"
T. KIDD, INSPECTOR.							
.....	.. ..	0·89	.....	.....	Pepper tissues only.....	30816	Genuine.
....	.....	1·02	.....	.....	" "	30828	"
....	.....	0·96	.....	... ..	About 10 per cent wheat starch.	30831	Adulterated.
.....	.....	0 90	.....	.....	Pepper tissues only.....	30837	Genuine.
....	. .	1 04	....	...	" "	30840	"
... .	.. ..	1·00	.....	....	" "	30843	"
....	..	2 48	.....	.....	" "	30846	"
.. ..	....	0·94	.....	.....	" "	30851	"
....	.... .	1·00	.....	... ..	" "	30859	"
....	.....	1·96	. ...	.....	" "	30863	"

BULLETIN No. 203—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
DISTRICT OF WINDSOR—						
1909.						
Oct. 4	White Pepper ..	42603	Alfred Deloge, Chatham .. .	½ lb..	20	F. F. Dalley Co., Ltd., Hamilton.
" 4	" ..	42608	E. R. Snook, Chatham..... .	½ " .	20	Unknown... ....
" 5	" ..	42613	H. Johnson, Walkerville..	½ " .	20	Dalton Bros., Toronto .....
" 5	" ..	42618	Chas. Macfarlane, Walkerville	½ " .	20	Unknown... ....
" 5	" ..	42620	Wm. Rockett, Walkerville....	½ " .	10	" ....
" 5	" ..	42623	Fielding & Campean, Windsor.	½ " .	18	Canada Spice & Grocery Co., London.
" 6	" ..	42628	J. D. Sovie, Essex.....	½ " .	15	Unknown.... ....
" 6	" ..	42630	C. P. Powell, Essex	½ " .	20	Gorman Eckert & Co., London.
" 7	" ..	42634	E. Quick, Kingsville..... . .	½ " .	20	Unknown..... ....
" 7	" ..	42640	J. J. Foster, Leamington.....	½ " .	15	Imperial Spice Co., Hamilton
DISTRICT OF MANITOBA—						
Sept. 16	" ..	39786	Wm. Mowat, Cypress River...	12 oz.	30	Campbell Bros., Wilson Winnipeg & Regina.
" 16	" ..	39787	H. Indridason & Co., Cypress River.	¾ lb..	25	The Jobin Marrin Co , Ltd., Winnipeg & Regina.
" 17	" ..	39788	H. S. Shilson, Roland..... ...	½ " .	20	Unknown.....
" 21	" ..	39789	The White City Grocery, P. Palsky, Mgr., Brandon.	½ " .	20	The Codvill Co., Brandon....
" 21	" ..	39790	W. Dowling & Co., Brandon..	½ " .	25	Unknown..... .....
" 21	"	39791	The A. E. Hill Co., Ltd., Griswold.	½ " .	20	" .....
" 21	" ..	39792	Garth Bros , Griswold.....	½ " .	20	" ....
" 22	" ..	39793	J. G. Hindson, Rapid City...	½ "	20	McLaren Ltd., Hamilton ...
" 28	" ..	39794	The Allison Macdonald Co., Baldur.	3 pks.	25	Unknown.... ....
" 28	" ..	39795	R. Rollins & Sons, Baldur	½ lb...	25	Gold Standard Mfg. Co., Winnipeg.

SESSIONAL PAPER No. 14

PEPPER.

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.					No. of Sample.	Remarks and opinion of the Chief Analyst.
	Water Soluble.	Ash per cent.			Microscopical Examination.		
		Total.	Soluble in Hydrochloric Acid.	Insoluble in Hydrochloric Acid (Sand).			
JNO. TALBOT, INSPECTOR.							
	p. c.	p. c.	p. c.	p. c.			
Labelled pure white pepper.	.....	0·94	.. ..	.....	Pepper tissues only.....	42603	Genuine.
....	.....	1·04	.....	.....	" "	42608	"
Labelled Dalton's Extra select spices. White Pepper.	.....	1·20	.....	.....	About 10 per cent wheat starch.	42613	Adulterated.
....	.....	1·00	.....	....	Pepper tissues only.....	42618	Genuine.
Vendor said he would not guarantee as pure.	.....	10·08	.....	.. ..	About 25 per cent wheat flour and some undetermined foreign matter apparently a Black Pepper.	42620	Adulterated apparently a black Pepper.
....	.....	1·08	....	.....	Pepper tissues only.....	42623	Genuine.
....	.....	1·10	.....	.....	" "	42628	"
....	. ..	0·76	. ..	.. ..	" "	42630	"
.. ..	.....	1·04	.....	.....	" "	42634	"
'Majestic' Brand. Pure white pepper. Guaranteed absolutely pure.	.....	2·14	.....	. . ..	" "	42640	"
A. C. LARIVIERE, INSPECTOR.							
'Royal Shield' Brand. White Pepper.	.....	1·14	.. ..	.....	Pepper tissues only.....	39786	Genuine.
'Challenger' Brand. Pure spices. White pepper	.....	0·94	.....	.. ...	" "	39787	"
... .	.....	1·00	.....	.....	" "	39788	"
.. . .	....	1·14	.....	.....	" "	39789	"
. . . .	.....	1·76	....	.....	" "	39790	"
. ...	.....	1·44	.....	. . ..	" "	39791	"
.. ..	.....	1·04	. ..	.....	" "	39792	"
....	.....	1·04	.....	.....	" "	39793	"
.....	.....	1·24	.....	. ....	" "	39794	"
'Gold Standard' pure ground white pepper.	...	1·08	.	.....	" "	39795	"

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
						DISTRICT OF CALGARY—
1909.						
Sept. 10	White Pepper..	35602	Bentley Co., Lethbridge	3 pkgs	45	A. Schilling & Co., San Francisco.
" 10	" ..	35603	Bradbur & Co., Lethbridge....	3 tins.	45	Pure Gold Mfg. Co., Ltd., Toronto.
" 11	" ..	35604	L. B. Cochrane, Med. Hat....	3 " .	30	Gold Standard Mfg. Co., Winnipeg.
" 11	" ..	35605	Spencer & Todd, Med. Hat....	3 pkgs	25	Codville & Co., Winnipeg....
" 11	" ..	35606	H. W. Ireland & Co., Med. Hat	3 " .	25	McLaren's Ltd., Hamilton..
" 11	" ..	35607	R. Dunn, Med. Hat....	3 " .	20	Georgeson & Co., Ltd., Calgary.
Oct. 7	" ..	35608	Acme Co., Edmonton.....	3 " .	45	R. Craig & Co., Ltd., Toronto
" 7	" ..	35609	Gariepy & Lessard, Edmonton.	3 " .	30	Blue Ribbon Ltd., Winnipeg
" 7	" ..	35610	Hallier & Aldridge, Edmonton	3 " .	45	Balfour & Co., Hamilton....
" 9	" ..	35611	J. H. Morris & Co., Edmonton	3 " .	40	White Star Mfg. Co., Winnipeg.
						DISTRICT OF VANCOUVER—
Sept. 14	White Pepper..	37726	Foran Bros., Vancouver.	3 tins.	30	Braid & Co., Vancouver.....
" 14	" ..	37727	West End Grocery, New Westminster.	½ lb..	30	W. H. Malkin & Co., Vancouver.
" 14	" ..	37728	Joe. Quoy, New Westminster..	3 tins.	30	Oriental Mills, Vancouver...
" 14	" ..	37729	C. B. Deans, New Westminster	3 " .	30	E. R. Durke, New York ....
" 15	" .	37730	A. R. Stacy, North Vancouver	3 " .	30	Empress Mfg. Co., Vancouver
" 15	" ..	37731	Welcome Parlors, North Vancouver.	3 " .	30	Kelly Douglas & Co., Vancouver.
" 18	" ..	37732	Pioneer Grocery, Vancouver..	½ lb..	30	Empress Mfg. Co., Vancouver
" 18	" ..	37733	A. M. Tolson, Vancouver..	½ " ..	20	Kelly Douglas & Co., Vancouver.
" 18	" ..	37734	R. Mitchell, Vancouver.....	3 tins.	30	Hudson's Bay Co., Vancouver
" 18	" ..	37735	W. J. McMillan & Co., Vancouver.	3 " .	30	W. J. McMillan & Co., Vancouver.
						DISTRICT OF VICTORIA—
Oct. 14	White Pepper ..	41549	Windsor Grocery Co., Victoria, B.C.	3 pkgs	30	Pioneer Coffee & Spice Mills Ltd., Victoria, B.C.
" 15	" ..	41550	The West End Grocery Co., Ltd., Victoria, B.C.	3 " .	30	R. P. Rithet & Co., Ltd Victoria, B.C.
" 15	" ..	41551	Copas & Young, Victoria, B.C.	3 " .	30	J. Braid & Co., Vancouver..

SESSIONAL PAPER No. 14

PEPPER.

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.					No. of Sample.	Remarks and opinion of the Chief Analyst.
	Water Soluble.	Ash per cent. Total.	Ash per cent. Soluble in Hydrochloric Acid.	Ash per cent. Insoluble in Hydrochloric Acid (Sand).	Microscopical Examination.		
R. W. FLETCHER, INSPECTOR.							
	p.c.	p.c.	p.c.	p.c.			
		0·90			Pepper tissues only	35602	Genuine.
		0·86			"	35603	"
		1·10			"	35604	"
		1·22			"	35605	"
		1·04			"	35606	"
		3·04			"	35607	"
		1·04			About 15 per cent wheat flour	35608	Adulterated.
		1·00			Pepper tissues only	35609	Genuine.
		1·44			"	35610	"
		1·00			"	35611	"
J. F. POWER, INSPECTOR.							
Guaranteed pure		1·04			Pepper tissues only	37726	Genuine.
Guaranteed absolutely pure.		0·80			"	37727	"
Guaranteed finest quality full strength.		0·90			"	37728	"
'Gauntlet' brand guaranteed full strength		1·39			"	37729	"
'Empress' brand full strength.		1·16			"	37730	"
'Columbia' brand guaranteed full strength.		1·00			"	37731	"
Full strength, always reliable.		0·92			Trace of white starch present	37732	Doubtful.
		1·16			Pepper tissues only	37733	Genuine.
'Imperial brand,' full strength.		0·90			"	37734	"
'Monarch' brand, full strength.		1·04			"	37735	"
D. O'SULLIVAN, INSPECTOR.							
'Empire'		0·98			Pepper tissues only	41549	Genuine.
'St. James'		1·08			"	41550	"
Guaranteed pure		1·10			"	41551	"

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
						DISTRICT OF VICTORIA—
1909.						
Oct. 15	White Pepper ..	41552	J. W. Speed, Victoria, B.C....	½ lb ..	20	Todhunter Mitchell & Co., Toronto.
" 15	" ..	41553	Saunders Grocery Co., Ltd., Victoria, B.C.	½ " ..	20	J. Braid & Co., Vancouver..
" 15	" ..	41554	Wm. B. Hall, Victoria, B.C...	½ " ..	20	Oriental Mills, Vancouver...
" 16	" ..	41555	Harrison & McDonald, Victoria, B.C.	3 pkgs	45	A. Shilling & Co., San Francisco, Cal.
" 16	" ..	41556	W. A. Jameson, Victoria, B.C.	3 "	30	F. F. Dalley Co., Ltd., Hamilton, Ont.
" 18	" ..	41557	L. Dickinson, Victoria, B.C...	3 "	30	E. R. Durkee & Co., New York, U.S.A.
" 18	" ..	41558	Bailey, Victoria, B.C..... ...	3 "	30	Empress Mfg. Co,, Vancouver, B.C.

SESSIONAL PAPER No. 14

PEPPER.

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.					No. of Sample.	Remarks and opinion of the Chief Analyst.
	Water Soluble.	Ash per cent.			Microscopical Examination.		
		Total.	Soluble in Hydrochloric Acid.	Insoluble in Hydrochloric Acid (Sand).			
D. O'SULLIVAN, INSPECTOR—*Concluded.*							
	p. c.	p. c.	p. c.	p. c.			
Labelled Todhunter pure white pepper.	.....	1·10	.....	.....	Pepper tissues only.....	41552	Genuine
... .	....	0·90	.....	.....	"	41553	"
....	.....	1·00	....	....	"	41554	"
'Shillings Best' white pepper.	.....	0·96	... .	....	"	41555	"
'Victoria' pure white pepper.	.....	1·26	.....	.... .	"	41556	"
'Gauntlet' white pepper.	.....	0·96	.....	.....	"	41557	"
'Empress' white pepper.	.....	1 06	..	.....	"	41558	"

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
						DISTRICT OF NOVA SCOTIA—
1909.						
Oct. 5	Black Pepper..	41816	T. J. Brown, Halifax, N.S....	3 pkgs	15	Jno. P. Mott & Co., Halifax, N.S.
" 5	" ..	41817	A. J. Finlay, Halifax, N.S...	"	15	W. H. Schwartz & Sons, Halifax, N.S.
" 5	" ..	41818	City Provision Store, Halifax, N.S.	"	15	" " ..
" 6	" ..	41819	John P. Mott & Co., Halifax, N.S.	"	..	Vendors. .....
" 6	" ..	41820	Shore & Campbell, Halifax, N.S.	"	30	C. H. Cochrane & Co., Ottawa
" 8	" ..	41821	S. L. Cross, Kentville, N.S....	"	30	Nat. Drug Co., Halifax, N.S.
" 11	" ..	41822	W. B. Calhoun, Amherst, N.S.	8 ozs.	15	Todhunter & Mitchell, Toronto.
" 11	" ..	41823	Moffatt Bros., Amherst, N.S..	3 pkgs	30	Dearborn & Co., St. John, N.B.
" 12	" ..	41824	H. W. Ryan & Co., Truro, N.S.	"	21	National Drug Co., Halifax, N.S.
" 12	" ..	41825	Angus & Pollock, Truro, N.S.	"	27	Jno. P. Mott & Co., Halifax, N.S.
						DISTRICT OF NEW BRUNSWICK—
Sept. 8	Black Pepper...	39563	G. E. Barbour Co., Ltd., St. John, N.B.	½ lb.	10	Vendors..... ..... .
" 14	" ..	39564	H. G. McBeath, St. John, N.B.	"	14	G. S. Deforests Sons Co., Ltd., St. John, N.B.
" 21	" ..	39565	John McKnight, Fredericton, N.B.	"	13	G. E. Barbour Co., Ltd., St. John, N.B.
" 22	" ..	39566	The John Graham Estate, Woodstock, N.B.	"	18	Todhunter & Mitchell, Toronto.
" 23	" ..	39567	B. Beveridge, Andover, N.B..	3 pkgs	30	Jones & Schofield, St. John, N.B.
" 24	" .	39568	F. D. Sadler, Perth, N.B.....	"	30	A. F. Randolph & Son, Fredericton, N.B.
Oct. 7	" ..	39569	J. D. Paulin, Newcastle. ...	"	30	Dearborn & Co., St. John, N.B.
" 7	" ..	39570	Mrs. S. A. Demers, Newcastle	"	30	H. W. Cole, Ltd., St. John, N.B.
" 9	" .	39571	W. J. Kent & Co., Bathurst, N.B.	"	24	" " ..
" 11	" ..	39572	E. J. Allingham, Campbellton, N.B.	"	30	Baird & Peters, St. John, N.B.
						DISTRICT OF QUEBEC—
Sept. 9	Black Pepper...	36632	W. Duhaime, St. Paulin.....	½ lb.	10	L. Chaput, Fils et Cie, Montreal.
" 9	" ..	36633	A. Blais, St. Paulin..	"	10	" " ..
" 9	" ..	36634	N. Ferron, St. Paulin.	"	10	" " ..
" 9	" ..	36635	J. S. Hogue, St Paulin	"	13	" " .

SESSIONAL PAPER No. 14

PEPPER.

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.					No. of Sample.	Remarks and opinion of the Chief Analyst
	Water Soluble.	Ash per cent. Total.	Soluble in Hydrochloric acid.	Insoluble in Hydrochloric Acid (Sand).	Microscopical Examination.		
R. J. WAUGH, INSPECTOR.							
	p.c.	p.c.	p.c.	p.c.			
Labelled Pure		5·94			Pepper tissues only	41816	Genuine.
"		6·08			" "	41817	"
"		5·40			Trace of leguminous starch	41818	Doubtful.
"		4·40			Pepper tissues only	41819	Genuine.
"		4·00			" "	41820	"
"		4·94			" "	41821	"
		4·10			" "	41822	"
Labelled Pure		6·54			" "	41823	"
"		4·38			" "	41824	"
"		4·58			" "	41825	"
J. C. FERGUSON, INSPECTOR.							
'Acorn' Brand		5·50			Pepper tissues only	39563	Genuine.
		5·08			" "	39564	"
		5·70			" "	39565	"
		4·50			" "	39566	"
Pure Black Pepper		3·94			Trace of wheat flour present	39567	Doubtful.
"		3·92			About 5 per cent of wheat starch (flour).	39568	"
'Perfection' Brand, absolutely pure.		10·64	5·06	5·58	Pepper tissues only	39569	Ash high. Adulterated.
'Thistle' Brand		5·34			" "	39570	Genuine.
"		5·34			" "	39571	"
'Reindeer' Brand		4·60			" "	39572	"
E. BELAND, INSPECTOR.							
		4·68			Pepper tissues only	36632	Genuine.
		5·60			Trace of wheat flour present	36633	Doubtful.
		4·60			Pepper tissues only	36634	Genuine.
		4·18			" "	36635	"

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
						DISTRICT OF QUEBEC—
1909.						
Sept. 9	Black Pepper...	36636	S. Guimond, St. Paulin.....	½ lb	10	Chevalier & Pouliot, Montreal.
" 9	" ..	36637	H. Abram, St. Paulin	"	12	....
" 9	" ..	36638	St. Vaillet, St. Paulin	"	10	Hudon, Hebert, Montreal...
" 9	" ..	36639	M. Dupuis, St. Paulin.....	"	10	L. Z. Magnam, Joliette. .. .
" 9	" ..	36640	A. Duhaime, St. Paulin.....	"	10	Chevalier & Pouliot, Joliette
" 9	" ..	36641	H. Lemin, St. Paulin.....	"	10	Lecaille Gendron, Montreal.
						DISTRICT OF ST. HYACINTHE—
Sept. 15	Black Pepper. ..	1228	S. L. Biron, Drummondville..	½ lb..	20	Banqueroute de J.u. Lafond, Sorel.
" 15	" ..	1229	V. Gingras, Upton.....	½ " ..	10	Unknown..... .....
" 16	" ..	1230	Gilmore & Girard, Waterloo..	½ " ..	13	" ....
" 16	" ..	1231	H. F. Desmarais, Marieville ..	½ " ..	13	Hudon, Hebert et Cie.....
" 22	" ..	1232	J. O. McDonald, Lac Megantic	½ " ..	15	Whitead & Turner, Quebec..
" 22	" ..	1233	White & Wiggett, Lennoxville	½ " ..	13	Unknown ....
" 22	" ..	1234	McMurray & Hall, Lennoxville.	½ " ..	15	F. F. Dalley Co., Ltd., Hamilton.
" 23	" ..	1235	J. Halyon, Sherbrooke	3 pks.	30	Denault Grain & Prov. Co., Sherbrooke.
" 24	" ..	1236	S. W. Hadlock, Coaticooke....	½ lb..	15	H. H. Edwards, Sherbrooke .
" 24	" ..	1237	Hubert & Fortier, Sherbrooke E	½ " ..	15	Unknown. ....
						DISTRICT OF MONTREAL—
Sept. 7	Black Pepper. ..	40336	Primeau et frere, Valleyfield..	½ lb..	15	F. F. Dalley Co., Ltd., Hamilton.
" 10	" ..	10337	J. A. Laporte, Berthierville...	½ " ..	13	Vendor..... .....
" 14	" ..	40338	Louis Jacques, St. Gabriel de Brandon.	½ " ..	20	" .....
" 15	" ..	40339	Edouard Briere, Terrebonne...	½ " ..	14	....
" 16	" ..	40340	James Brown, Huntingdon....	3 tins.	30	White Swan Spices & Cereals Ltd., Toronto.
" 21	" ..	10341	P. Charron, Longueuil.....	½ lb..	10	Hudon, Hebert & Co., Montreal.
" 22	" ..	40342	Hutton Bros., 206 St. Antoine St., Montreal.	½ " ..	15	... .
" 29	" ..	40343	J. A. Gravel, St. Rose.....	½ " ..	17	....
" 29	" ..	40344	J. A. Joly, St. Rose.....	½ " .	12	The European Tea & Coffee Co., Montreal.
" 29	" ..	40345	N. Sirois, 32 Craig St., Montreal.	½ " ..	20	....

SESSIONAL PAPER No. 14

PEPPER.

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.					No. of Sample.	Remarks and opinion of the Chief Analyst.
	Water Soluble.	Ash per cent. Total.	Soluble in Hydrochloric Acid.	Insoluble in Hydrochloric Acid (Sand).	Microscopical Examination.		
E. BELAND, INSPECTOR—*Concluded.*							
.....	.....	5·96	.....	.....	Pepper tissues only.....	36636	Genuine
.....	.....	10·50	3·86	6·64	About 15 per cent wheat flour.	36637	Ash high. Adulterated.
.....	.....	15·10	7·30	7·80	About 20 per cent wheat flour and cayenne tissues.	36638	" "
.....	....	7·36	4 78	2 58	Pepper tissues only.....	36639	" "
.....	.....	9·00	4 20	4 80	About 20 per cent wheat flour	36640	" "
.....	.....	5·20	....	.....	Pepper tissues only..... ...	36641	Genuine.
J. C. ROULEAU, INSPECTOR.							
.....	.....	4·84	.....	.....	Stone cells in excess. Probably from cocoanut shells.	1228	Adulterated.
.....	....	16·16	5·00	11·16	About 25 per cent wheat flour	1229	Ash high. Adulterated.
.....	.....	4·92	.....	.....	Pepper tissues only.....	1230	Genuine.
.....	.....	8·04	4·04	4·00	About 20 per cent maize flour	1231	Ash high. Adulterated.
.....	....	6·24	.....	....	Pepper tissues only..... ..	1232	Genuine.
.....	....	4·68	.....	.....	Trace of foreign starch.....	1233	Doubtful.
.....	.....	4·38	.....	.....	Pepper tissues only....	1234	Genuine.
Duchess.....	.....	3·84	.	.....	"	1235	"
.....	.....	10·44	4·70	5·74	About 30 per cent wheat flour	1236	Ash high. Adulterated.
.....	.....	14·10	5·52	8·58	Trace of wheat starch present	1237	"
J. J. COSTIGAN, INSPECTOR.							
.....	.....	4·80	...	.....	Pepper tissues only.....	40336	Genuine.
.....	....	5·40	.....	.....	"	40337	"
.....	....	7·10	....	.....	"	40338	Ash high. Doubtful.
.....	.....	5·30	.....	...	Trace of wheat flour present.	40339	Doubtful.
.....	....	5·24	.....	.....	About 10 per cent maize and wheat flour.	40340	Adulterated.
.....	.....	7·20	3·80	3·40	Trace of wheat flour present.	40341	Ash high. Doubtful.
.....	.....	10·88	6 32	4·56	Trace of wheat starch present	40342	Ash high. Adulterated.
.....	.....	11·54	4·64	6·90	About 30 per cent wheat flour	40343	"
.....	...	6·30	2 26	4·04	Trace of wheat flour present..	40344	Doubtful.
.....	....	19·70	5·70	14·00	Pepper tissues only.....	40345	Ash high. Adulterated.

BULLETIN No. 203—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF OTTAWA—			
1909.						
Sept. 22	Black Pepper..	42811	C. S. Northcott, Vankleek Hill	½ lb ..	15	Unknown
" 25	" ..	42812	C. A. Farmer, Perth	½ " ..	15	Pure Gold Mfg. Co., Ltd., Toronto.
" 27	" ..	42813	P. Legault, Gatineau Point	½ " ..	20	Unknown
" 28	" ..	42814	H. R. Sawdon, Spencerville	½ " ..	15	H. N. Bate & Sons, Ottawa..
" 29	" ..	42815	E. G. Campeau, Alexandria	½ " ..	13	S. H. Ewing & Son, Montreal
Oct. 4	" ..	42816	A. S. Russell, Galetta	½ " ..	15	Jas. Turner & Co., Hamilton.
" 4	" ..	42817	D. B. Eastman, Kinburn	½ " ..	12	Turner & Co., Hamilton.
" 5	" ..	42818	Mitchell Bros., Ottawa	½ " .	20	C. H. Cochrane & Co., Ottawa.
" 5	" ..	42819	Miss Smith, Ottawa	½ " ..	18	S. J. Major Ltd., Ottawa..
Sept. 24	" ..	42820	Kendrick & Summers, Winchester.	½ " ..	20	S. J. Carter & Co., Montreal
			DISTRICT OF KINGSTON—			
Sept. 7	Black Pepper..	42726	C. S. Litton, Kingston	½ lb ..	20	H. Cochrane, Ottawa.
" 7	" .	42727	C. Saunders, Kingston	½ " ..	20	Gorman & Eckert, London, Ont.
" 7	" ..	42728	C. Pickering, Kingston	½ " ..	15	Lowe, Toronto
" 7	" ..	42729	Anderson Bros., Kingston	½ " ..	20	Hamilton Spice & Coffee Co., Hamilton.
" 7	" ..	42730	E. S. Suddard, Kingston	½ " ..	13	Greig, Toronto
" 7	" ..	42731	Kirk & Lee, Kingston	½ " ..	20	McLaren's, Hamilton.
" 7	" ..	42732	Keley Bros., Kingston	½ " ..	15	Pure Gold, Toronto
" 7	" ..	42733	Geo. Gibson, Kingston	½ " ..	20	Lister Pure Food Co., Toronto.
" 8	" ..	42734	S. Fourt, Port Hope	½ " ..	15	Red Feather
" 8	" ..	42735	F. Rosevear, Port Hope	½ " ..	15	Lowe's, Toronto
			DISTRICT OF TORONTO—			
Sept. 13	Black Pepper..	41372	A. H. Zurbriggt, Markham	½ lb ..	20	Unknown
" 14	" ..	41373	A. MacPhail, Uxbridge	½ " ..	15	G. S. Dunn & Co., Hamilton

SESSIONAL PAPER No. 14

PEPPER.

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.						Remarks and opinion of the Chief Analyst.
	Water Soluble.	Ash per cent.			Microscopical Examination.	No. of Sample.	
		Total.	Soluble in Hydrochloric Acid.	Insoluble in Hydrochloric Acid (Sand).			
J. A. RICKEY, INSPECTOR.							
	p.c.	p.c.	p.c.	p.c.			
		5·16			Pepper tissues only	42811	Genuine.
		5·74			"	42812	"
		4·50			"	42813	"
		4·38			"	42814	"
		3·00			Trace of wheat flour present	42815	Doubtful.
		3·74			Pepper tissues only	42816	Genuine.
		4·88			"	42817	"
		4·36			"	42818	"
		5·30			Trace of wheat starch present	42819	Doubtful.
		11·90	3·66	8·24	About 40 per cent wheat and maize.	42820	Ash high. Adulterated.
JAS. HOGAN, INSPECTOR.							
		4·58			Pepper tissues only	42726	Genuine.
		3·84			"	42727	"
		3·00			"	42728	"
		4·40			"	42729	"
		4·12			About 10 per cent of wheat and maize.	42730	Adulterated.
		4·64			Pepper tissues only	42731	Genuine.
		4·52			"	42732	"
		4·68			"	42733	"
		4·28			"	42734	"
		5·74			"	42735	"
H. J. DAGER, INSPECTOR.							
'Bison' brand. Pure black pepper.		3·80			Pepper tissues only	41372	Genuine.
		4·80			About 10 per cent wheat flour and slight excess of stone cells.	41373	Adulterated.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
DISTRICT OF TORONTO—						
1909.						
" 14	Black Pepper...	41374	Edwards Bros., Beaverton	½ " ..	13	Pure Gold Mfg. Co., Ltd., Toronto.
" 15	" ...	41375	John Wilson, Orillia.....	½ " ..	15	Unknown ....
16	" ...	41376	W. Johnson, Midland.....	½ " ..	15	Todhunter, Mitchell & Co., Toronto.
" 16	" ...	41377	H. C. Doersam, Penetang.....	½ " ..	20	Geo. Bristol, Hamilton.....
" 17	" ...	41378	E. A. Sibbald, Barrie.....	½ " ..	20	Lumsden Bros., Hamilton...
" 17	" . .	41379	M. J. Douglas, Bradford	½ " ..	15	The White Swan Spices and Cereals, Ltd., Toronto.
" 22	" ...	41380	Mrs. J. Lovejoy, Hamilton....	½ " ..	20	G. S. Dunn & Co., Hamilton.
" 22	" ...	41381	S. Nicholson, Hamilton.....	½ " ..	20	" " ..
DISTRICT OF LONDON—						
Sept. 13	Black Pepper . .	30817	Pickard & Fleming, St. Mary's	½ lb ..	13	Gorman & Eckert, London, Ont.
" 14	" ...	30821	Flaherty & Co., Stratford.....	½ " ..	15	McLaren's, Hamilton . ... .
" 14	" ..	30825	Beaigh & Co., Stratford.....	½ " ..	15	Unknown ....
" 15	" ...	30830	J. H. Monteth, Stratford.. ...	½ " ..	15	London Canning and Supply Co., London, Ont.
" 15	" ...	30833	C. J. Moore, Mitchell	½ " ..	15	Mayell & Co., Toronto ... .
" 15	" . .	30835	Peter Dill, Dublin	½ " ..	20	F. F. Dalley Co., Ltd., Hamilton.
" 20	" ...	30844	J. A. McCrea, Guelph.....	½ " ..	15	Todhunter & Mitchell, Toronto.
" 21	" ...	30849	O. C. Whitely, Goderich.....	½ " ..	15	A. M. Smith, London.....
" 21	" ...	30853	Morrish & Venetteo, Goderich.	½ " ..	15	McEwing Bros., Goderich...
" 22	" ...	30855	Jas. Cutt, Blythe.....	½ " ..	13	F. F. Dalley Co., Ltd., Hamilton.
DISTRICT OF WINDSOR—						
Oct. 4	Black Pepper...	42602	Jno. W. Dyer, Chatham.....	½ lb .	15	Dunn & Co., Hamilton... .
" 4	" ...	42605	J. A. Mackiness, Chatham.. .	½ " ..	15	Gorman, Eckert & Co., London, Ont.
" 4	" ...	42607	C. G. Moore, Chatham.....	½ " ..	15	McLaren Spice Co., Hamilton
" 5	" ...	42614	T. W. Nairn, Walkerville.....	½ " ..	15	Todhunter & Mitchell, Toronto.

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PEPPER.

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.						Remarks and opinion of the Chief Analyst.
	Water Soluble.	Ash per cent.			Microscopical Examination.	No. of Sample.	
		Total.	Soluble in Hydrochloric Acid.	Insoluble in Hydrochloric Acid (Sand).			
H. J. DAGER, INSPECTOR—*Concluded.*							
	p.c.	p.c.	p.c.	p.c.			
Absolutely pure black pepper.	....	4·58	.....	...	Pepper tissues only.....	41374	Genuine.
Superfine pure black pepper.	.....	3·80	... ..	.....	About 15 per cent wheat and maize flour.	41375	Adulterated.
Pure black pepper.....	.....	4 50	....	.. ..	Pepper tissues only.....	41376	Genuine.
"	.. ...	5·80	....	. ...	"	41377	"
"	.....	4 08	. ..	.....	Trace of wheat starch present	41378	Doubtful.
....	.....	4 90	.....	.....	Pepper tissues only..... ...	41379	Genuine.
....	.....	3·90	. ..	.....	About 15 per cent wheat flour	41380	Adulterated.
Labelled black pepper..	.....	3·90	.....	.....	About 10 per cent wheat flour	41381	"
T. KIDD, INSPECTOR.							
....	.....	5·80	.....	...	Pepper tissues only.....	30817	Genuine.
... .	. .	4 26	. .	....	"	30824	"
....	.....	4·60	. . .	.. .	Trace of wheat starch.....	30825	Doubtful.
....	.....	4·82	.. ...	.....	Pepper tissues only.....	30830	Genuine.
....	.....	4·48	.....	. ..	"	30833	"
.....	.....	4·36	....	.....	"	30835	"
....	. .	5·14	.....	.....	"	30844	"
.....	.....	5 62	.....	.. ..	"	30849	"
....	.....	5·34	.... .	.. ...	"	30853	"
.....	... .	4·16	.....	.....	"	30856	"
JNO. TALBOT, INSPECTOR.							
Labelled pure black pepper.	.....	3·64	.....	.....	About 15 per cent wheat flour and some cocoanut shells.	42602	Adulterated.
'Forest' City pure spices.	....	3·26	... ..	.....	Pepper tissues only.....	42605	Genuine.
'Invincible' spices black pepper, ground pure from specially selected goods.	.....	4·84	.....	.....	"	42607	"
....		4·28	... .	....	"	42614	"

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF WINDSOR—			
1909.						
Sept. 5	Black Pepper...	42616	D. Pratt, Walkerville.....	½ lb.	13	Jno. Scott, Windsor.....
" 5	" ...	42617	O. Eastman, Walkerville.....	½ " ..	15	Imperial Spice Co., Hamilton
" 6	" ...	42629	A. Kaines, Essex.....	½ " ..	15	McLaren's, Hamilton.....
" 7	" ...	42633	G. C. Greives, Kingsville	½ " ..	15	Canada Spice and Grocery Co., London, Ont.
" 7	" ..	42635	A. Campbell, Leamington.....	½ .	20	" " ..
" 7	" ...	42636	G. M. Sawyer, Leamington....	½ " ..	20	Gorman, Eckert & Co., London, Ont.
			DISTRICT OF MANITOBA—			
Sept. 15	Black Pepper...	39801	B. Loewen, Winkler.....	¾ lb ..	20	Gold Standard Mfg. Co., Winnipeg.
" 15	" ...	39802	Wyck & Krocker, Winkler...	¾ " ..	30	G. S. Dunn & Co., Hamilton.
" 15	" ...	39803	A. Harder, Plum Coulee.....	½ " ..	20	The Codville Co., Winnipeg
15	" ...	39804	J. I. Bargen, Plum Coulee....	¾ " ..	30	Gorman, Eckert & Co., London and Winnipeg.
" 16	" ...	39805	Wm. Mowat, Cypress River..	6 oz ..	30	Foley Bros. Larson Co., Winnipeg, Edmonton and Vanc.
" 27	" ...	39806	J. H. Putnam, Dunrea.....	3 pks.	25	Gold Standard Mfg. Co., Winnipeg.
" 27	" ..	39807	Mrs. W. A. Seebach, Dunrea..	½ lb ..	15	Gorman, Eckert & Co., London and Winnipeg.
" 28	" ...	39808	The Allison Macdonald Co., Baldur.	½ " ..	20	Unknown. .....
" 28	" ...	39809	Jas. Overend & Co., Ninette..	½ " ..	15	" .....
" 28	" ...	39810	John Yellowless, Ninette. ...	½ " ..	15	Gold Standard Mfg. Co., Winnipeg.
			DISTRICT OF CALGARY—			
Sept. 10	Black Pepper ..	35612	Hudson Bay Co., Lethbridge..	3 pkgs	30	Hudson Bay Co., Winnipeg..
" 10	" ..	35613	Bentley & Co., Lethbridge....	"	30	Vendors.....
" 10	" ..	35614	Bradbur & Co., Lethbridge....	"	30	Gold Standard Co., Winnipeg
" 11	" ..	35615	Spencer & Todd, Medicine Hat	"	30	" " ..
" 11	" ..	35616	H. W. Ireland Co., Medicine Hat.	"	20	McLarens Ltd., Hamilton...
" 11	" ..	35617	R. Dunn, Medicine Hat.....	"	20	Georgeson & Co., Calgary...

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PEPPER.

Inspectors's Report. (Is not an expression of opinion).	Results of Analysis.					No. of Sample.	Remarks and opinion of the Chief Analyst.
	Water Soluble.	Ash per cent. Total.	Ash per cent. Soluble in Hydrochloric Acid.	Ash per cent. Insoluble in Hydrochloric Acid (Sand).	Microscopical Examination.		
JNO. TALBOT, INSPECTOR—*Concluded.*							
	p.c.	p.c.	p.c.	p.c.			
... .	.....	8·60	7·60	1·00	About 15 to 20 per cent of foreign starch, mostly wheat	42616	Ash high. Adulterated.
'Majestic,' guaranteed absolutely pure.	.....	5·24	.....	.. ..	Pepper tissues only.....	42617	Genuine.
The quintessence of purity and flavour.	. . .	4·80	.....	.. ..	"	42629	"
'Crest' brand pure spices.	.....	4·84	.....	.....	"	42633	"
" " ..	.....	4·56	.....	... ..	"	42635	"
'Forest' City pure spices.	.....	1·40	.....	.....	"	42636	Is white pepper. Genuine.
A. C. LARIVIERE, INSPECTOR.							
'Gold Standard' pure ground black pepper.	.....	5·34	....	.....	Pepper tissues only.....	39801	Genuine.
'Red Cross' selected spices black pepper.	.....	4·00	.....	. ..	About 10 per cent wheat flour, cayenne tissue.	39802	Adulterated.
.. ..	....	5·64	.....	.....	Pepper tissues only.....	39803	Genuine.
'Forest City" pure black pepper.	.....	0 96	.	. ..	"	39804	"
'Premier' brand spices pure black pepper.	.....	5·08	.....	... .	"	39805	"
'Gold Standard' pure ground black pepper.	.....	5·50	....	.....	"	39806	"
'Forest City' pure spices pepper.	.....	4 44	.....	.....	"	39807	"
....		4 40	.....	.....	"	39808	"
.....	.....	5·24	.....	.....	"	39809	"
.....	.....	5·60	.....	.....	"	39810	"
R. W. FLETCHER, INSPECTOR.							
....	.....	5·24	....		Pepper tissues only..... ...	35612	Genuine.
....	.. ..	4·48	.....		" "	35613	"
....	.....	5·08	....		" "	35614	"
....	.....	5·48	.....		" "	35615	"
. .....	..	5·00	..... .		" "	35616	"
....	.....	5·00	.....		" "	35617	"

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF CALGARY—			
1909.						
Oct. 7	Black Pepper...	35618	Acme Co., Edmonton.....	3 pkgs	30	White Swan Spice Co., Ltd., Toronto.
" 7	" ..	35619	Gariepy & Lessard, Edmonton	"	30	Blue Ribbon, Ltd., Winnipeg
" 7	" ..	35620	Hallier & Aldridge, Edmonton	"	30	Balfour & Co., Hamilton....
" 7	" ..	35621	J. H. Morris & Co., Edmonton	"	30	White Star Mff. Co., Winnipeg.
			DISTRICT OF VANCOUVER—			
Sept. 14	Black Pepper...	37736	A. Gaudin, New Westminster.	3 tins	30	Wilson & Co., Victoria.....
" 14	" ..	37737	Geo. Adams, NewWestminster	"	30	Kelly Douglas & Co., Vancouver.
" 15	" ..	37738	J. A. McMillan, North Vancouver.	"	30	Empress Mfg. Co., Vancouver
" 17	" ..	37739	Rubinowitz Department Store, Steveston.	"	30	Pioneer Coffee & Spice Mills, Victoria.
" 17	" ..	37740	J. E. Steady, Vancouver.....	½ lb.	30	Kelly, Douglas & Co., Vancouver.
" 17	" ..	37741	Mrs. A Nicholson, Vanconver.	"	25	Oriental Mills, Vancouver...
" 17	" .	37742	Tong Chong Co., Vancouver..	3 pkgs	30	Todhunter, Mitchell Co., Toronto.
" 17	" ..	37743	City Grocery, Vancouver	½ lb.	30	Braid & Co., Vancouver.....
" 18	" ..	37744	C. Groth, Vancouver	3 tins	30	Oriental Mills, Vancouver...
" 18	" ..	37745	Empress Mfg. Co., Vancouver.	½ lb.	30	Empress Mfg. Co., Vancouver
			DISTRICT OF VICTORIA—			
Oct. 14	Black Pepper...	41559	Windsor Grocery Co., Victoria, B. C.	3 pks.	30	Pioneer Coffee & Spice Mills, Ltd., Victoria, B. C.
" 15	" ...	41560	The West End Grocery Co., Ltd., Victoria, B. C.	3 " .	30	R. P. Rithet & Co., Ltd., Victoria, B. C.
" 15	" ...	41561	Copas & Young, Victoria, B.C.	3 " .	30	J. Braid & Co., Vancouver..
" 15	" ...	41562	J. W. Speed, Victoria, B. C...	½ lb..	20	Todhunter Mitchell & Co. Toronto.
" 15	" ...	41563	Saunders Grocery Co., Ltd., Victoria, B. C.	½ " ..	15	J. Braid & Co., Vancouver..
" 15	" . .	41564	Wm. B. Hall, Victoria, B. C..	½ " ..	20	Oriental Mills, Vancouver...
" 15	" ...	41565	Harrison & McDonald, Victoria B. C.	3 pks.	45	A. Shilling & Co., San Francisco, Cal.
" 16	" ...	41566	W. A. Jameson, Victoria, B.C.	3 " .	30	F. F. Dalley Co., Ltd., Hamilton.
" 18	" ...	41567	L. Dickson, Victoria, B. C....	3 " .	30	E. R. Durkee & Co., New York, U.S.A.
" 18	" ...	41568	E. G. Bailey, Victoria, B.C....	3 " .	30	Empress Mfg. Co., Vancouver B. C.

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PEPPER.

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.					No. of Sample.	Remarks and opinion of the Chief Analyst.
	Water Soluble.	Ash per cent. Total.	Soluble in Hydrochloric Acid.	Insoluble in Hydrochloric Acid (Sand).	Microscopical Examination.		
R. W. FLETCHER, INSPECTOR—*Concluded.*							
	p.c.	p.c.	p.c.	p.c.			
.....	.....	4·84	.....	.....	About 10 per cent maize flour	35618	Adulterated.
....	.....	3·94	.....	....	Pepper tissues only...	35619	Genuine.
....	.....	4·60	....	.....	" "	35620	"
....	.....	5·16	.....	.....	" "	35621	"
J. F. POWER, INSPECTOR.							
Guaranteed first quality		4 14	.....	.....	Pepper tissues only....	37736	Genuine.
Guaranteed absolutely pure.	.....	4·58	.....	.....	" "	37737	"
Full strength.....	.....	5·24	.....	....	" "	37738	"
Empire Brand, guaranteed absolutely pure.	...	4·80	.....	.....	" "	37739	"
.....	.. .	2 76	....	.....	About 25 per cent wheat flour	37740	Adulterated.
....	.....	5·50	.....	.... .	Trace of what starch present.	37741	Doubtful.
Guaranteed absolutely pure.	.....	3·50	.....	.....	Pepper tissues only.....	37742	Genuine
....	.....	3·90	.....	.. .	" "	37743	"
Full strength.....	....	4·04	.....	.....	" "	37744	"
"	.....	5·64	.....	.....	" "	37745	"
D. O'SULLIVAN, INSPECTOR.							
'Empire' Black pepper	.. ..	6 04	...	.....	Pepper tissues only...	41559	Genuine.
'St. James' Black pepper.	.....	5 82	.....	....	" "	41560	"
Guaranteed pure.....	.....	6·00	.....	.....	" "	41561	"
Labelled Todhunter's pure Black Pepper.	.....	4·40	.....	.....	" "	41562	"
.. ..	.....	5·60	.....	.....	" "	41563	"
....	...	4·14	.....	.....	Trace of foreign starch present	41564	Doubtful.
'Shilling's Best'... .	.....	4·40	.. .	.....	Pepper tissues only.....	41565	Genuine.
'Victoria' pure Black pepper.	.....	3 24	.. .	....	" "	41566	"
'Gauntlet' Black pepper.	.....	4·46	.. ..	.....	" "	41567	"
Empress' Black pepper.	.. ..	5·70	.....	...	" "	41568	"

APPENDIX Y.

BULLETIN No. 204—CANNED SOUP.

OTTAWA, March 24, 1910.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I beg to hand you a report upon 150 samples, purchased throughout Canada, in December last, as Canned Soup.

With two exceptions, due to carelessness of the inspectors, these articles are correctly named. The exceptions are No. 38866 and 42763; both of which are dry material, put up in paper, and should not have been accepted for purposes of this inspection.

Complaints have been received from time to time, making mention of the following objections in Canned Soups:—

1. Corrosion of the can.
2. Unsoundness of the contents.
3. Discoloration
4. Substitution of other material than that designated on the label, In particular to the substitution of other flesh than chicken (or fowl) in so-called chicken soup.

As to the condition of the can, the samples now reported may be classified as follows:—

	Samples.
Can distinctly corroded	7
" slightly "	3
" in fair condition	14
" in good "	124
Paper wrappers	2
Total	150

Corrosion of the can proceeds in the first place from imperfect tinning, but is naturally intensified by the acidity of the contents. In most cases the contents are faintly acid, but generally in so slight a degree as to make quantitative expression of the acidity difficult and unnecessary. In eight (8) samples, the acidity was sufficiently marked to permit of exact determination, and was found to represent percentages of acetic acid (weight in volume) varying from 0·046 to 0 225. Marked corrosion was noted in only one of these eight samples (0·072 acid) and slight corrosion in another (0·127). It is evident, however, that as corrosion due to acidity proceeds, the acid is neutralized, and a fairly high acidity in the fresh soup, may be compatible with strict neutrality in the same sample, after long keeping. In this case, iron goes into solution, (with possible traces of tin or lead). The discoloration complained of is usually due to solution of iron, which, however, can have no poisonous effects. Lead was not found in any sample; but traces of tin were noted in four (4) samples. The amount was too small to have any physiological significance.

As regards the soundness of the contents, these were found to be good in 137 samples, and slightly unsound in 11 samples. In none, however, had decomposition proceeded far enough to be regarded as spoiled, or made dangerous in use.

Some years ago, I made an attempt to distinguish between chicken flesh and veal, (or other substitute) in soups. The results of this examination were so unsatisfactory that further work must be done before a definite pronouncement in the matter can be made.

This is the first time that canned soup has been made the subject of inspection under the Adulteration Act. In the absence of legal standards for the article, and of any established violation of the terms of the Act, I am unable to describe any of the samples herein reported, as being technically adulterated.

I beg to recommend publication of this report as Bulletin No. 204.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
						DISTRICT OF NOVA SCOTIA—
1909.						
Dec. 7	Canned Soup ...	41771	John Tobin & Co., Halifax, N.S.	3 tins.	30	Franco-Am. Food Co., Jersey City, U.S.
" 7	" ..	41772	Bauld Bros., Ltd., Halifax, N.S.	3 " .	30	Jos. Campbell & Co., Camden, New Jersey, U.S.
" 7	" ..	41773	J. Frank Crowe & Co., Halifax, N.S.	3 " .	30	Libby, McNeil & Libby, Chicago, Ill.
" 7	" ..	41774	A. & W. Smith & Co., Halifax, N.S.	3 " .	30	Van Camp Packing Co., Indianapolis, U.S.A.
" 7	" ..	41775	Wentzell's, Ltd., Halifax, N.S.	3 " .	35	Libby, McNeil & Libby, Chicago, Ill.
" 13	" ..	41786	J. H. Barss, Wolfville, N.S...	3 " .	35	Jos. Campbell & Co., Camden, New Jersey, U.S.
" 15	" ..	41787	Colin McNab & Co., Dartmouth, N.S.	3 " .	45	Van Camp Packing Co., Indianapolis, U.S.
" 15	" ..	41788	G. A. Ormon, Dartmouth, N.S.	3 " .	38	Libby, McNeil & Libby, Chicago, Ill.
" 15	" ..	41789	Coleman & Eisener, Dartmouth, N.S.	3 " .	45	Jos. Campbell & Co., Camden, N. J., U.S.
" 15	" ..	41790	Forsyth, Jr., Dartmouth, N.S.	3 " .	45	Armour, Ltd., Toronto.....
						DISTRICT OF PRINCE EDWARD ISLAND—
Dec. 6	Canned Soup ...	38583	A. Currie.	3 tins.	42	Jos. Campbell & Co., Camden, N.J., U.S.
" 8	" ..	38584	R. H. Jenkins, Charlottetown.	3 " .	90	Franco-Am. Food Co., New Jersey, U.S.
" 10	" .	38585	Brace & McKay, Summerside.	3 " .	45	The Van Camp Packing Co., Indianapolis, U.S.
" 10	" ..	38586	" " ..	3 " .	39	W. A. Laird, Summerside...
" 10	" ..	38587	Sanderson & Co., Charlottetown	3 "	90	Crosse & Blackwell, London, Eng.
" 15	" ..	38588	M. Duffey & Co., Charlottetown	3 " .	45	Libby, McNeil & Libby, Chicago, Ill.
" 15	" ..	38589	John McKenna, Charlottetown	3 " .	75	H. J. Heinz Co., Pittsburg, U.S.
" 16	" ..	38590	Beer & Goff, Charlottetown....	3 " .	90	C. & E. Morton, London, Eng.'
" 16	" ..	38591	Stewart & Son, Charlottetown.	3 " .	45	Jos. Campbell & Co., Camden N.J., U.S.
" 16	" ..	38592	J. T. McDonald, Charlottetown	3 " .	45	Libby, McNeil & Libby, Chicago.
						DISTRICT OF NEW BRUNSWICK—
Dec. 3	Canned Soup ..	39598	H. W. Cole, Ltd., St. John, N.B.	3 tins.	30	Jos. Campbell Co., Camden, N.J., U.S.
" 3	" ..	39599	Baird & Peters, St. John, N.B.	3 " .	119	Franco-Am. Food Co., Jersey City, N.J., U.S.
" 8	" ..	39600	G. E. Barbour Co., Ltd., St. John, N.B.	3 " .	30	John Campbell Co., Camden N.J., U.S.
" 14	" ..	39601	Geo. T. Whelpley, Fredericton, N.B.	3 " .	45	Franco-Am. Food Co., Jersey City Heights, N.J., U.S.
" 16	" ..	39602	Inches & Grimmer, St. Stephen, N.B.	3 " .	45	Joseph Campbell Co., Camden, N.J., U.S.
" 17	" ..	39603	Yerxa Grocery Co., Woodstock, N.B.	3 " .	40	Van Camp Packing Co., Indianapolis, U.S.
" 20	" ..	39604	Weaver & Co., Perth, N.B....	3 " .	45	Jos. Campbell & Co., Camden, N.J., U.S.

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CANNED SOUP.

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.					No. of Sample.
	Condition of		Acidity of Strained Filtrate (as Acetic)	Metallic Contamination.	Remarks.	
	Can.	Contents.				
R. J. WAUGH, INSPECTOR.						
			p. c.			
Mock turtle soup	Good	Good	Slight	None	Beef, &c.	41771
"	"	"	"	"	"	41772
"	"	"	Mere trace	"	"	41773
Cream of celery soup	"	"	Neutral	"	Celery, &c.	41774
Chicken soup	"	"	"	"	Chicken, rice, celery, &c	41775
Consomme soup	"	"	Mere trace	"	Clear jellied stock	41786
Mock turtle soup	"	"	Slight	"	Solid jellied beef	41787
"	"	"	Trace	"	Beef, &c.	41788
"	"	"	Slight	"	"	41789
Savoy soup. Condensed chicken.	"	"	Neutral	"	Chicken, rice, &c.	41790
THEO. MOORE, INSPECTOR.						
	Good	Good	Trace	None	Chicken, rice, parsley	38583
	"	"	Slight	"	Beef, rice, curry powder, &c.	38584
Van Camp's concentrated mock turtle soup.	Fair	Not very good.	"	"	Beef, &c.	38585
Laird's chicken soup	Good.	Good	None	"	Chicken and jelly.	38586
Mock turtle soup, thick	Corroded	"	0·072	"	Beef tongue, &c	38587
Libby's Premier concentrated mock turtle soup.	Good	"	Trace	"	Beef, &c.	38588
Heinz tomato soup, prepared from choice ripe tomatoes and pure sweet cream.	Slightly corroded	"	0·127	Trace tin	Tomato, &c.	38589
C. & E. Morton, oxtail soup.	Good	"	Trace	None	Beef, bone, vegetables, &c.	38590
Campbell's condensed oxtail soup.	Slightly corroded	"	Neutral	"	Beef broth, barley, &c	38591
Libby's Premier concentrated mock turtle soup.	Good	Good	Slight	"	Beef, onions, &c	38592
J. C. FERGUSON, INSPECTOR.						
Campbell's condensed mock turtle soup.	Good	Good	Slight	None	Beef, &c.	39598
	"	"	Trace	"	"	39599
Campbell's condensed mock turtle soup.	"	"	"	"	"	39600
Mock turtle	"	"	Slight	"	"	39601
Campbell's condensed mock turtle soup.	"	"	Trace	"	"	39602
Van Camp's concentrated mock turtle soup	Slightly corroded	Not in very good shape.	Slight	"	"	39603
Campbell's condensed mock turtle soup.	Good	Good	"	"	"	39604

BULLETIN No. 204—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF NEW BRUNSWICK—			
1910. Jan. 4	Canned Soup ...	39605	The Sussex Mercantile Co., Ltd., Sussex, N.B.	3 tins.	36	The Wm. Davies Co., Ltd. Toronto.
" 5	" ..	39606	F. P. Reid & Co., Moncton, N.B.	3 " .	36	Armour, Ltd..... .. ....
" 8	" ..	39607	McKenzie & Trueman, Campbellton, N.B.	3 " .	45	Jos. Campbell Co., Camden, N.J.
			DISTRICT OF QUEBEC—			
1909. Dec. 22	Canned Soup ...	36667	A. Drolet, 714 Rue St. Valier..	3 tins.	45	Jno. Campbell, New Jersey .
" 22	" ..	36668	Jos. Falardeau, 271 Rue St. Joseph.	3 " .	60	Heinz's, Pittsburgh, N.J....
" 22	" ..	36669	" " ..	3 " .	45	J. B. Renaud, Quebec .....
" 22	" ..	36670	" " ..	3 " .	45	J. A. Chabot, Quebec. .....
" 22	" ..	36671	C. Riverin, 55 Rue de la Couronne.	3 " .	45	Langlois & Paradis, Quebec .
" 22	" ..	36672	" " ..	3 " .	45	" " ..
" 22	" ..	36673	" " ..	3 " .	45	" " ..
" 22	" ..	36674	" " ..	3 " .	45	" " ..
" 22	" ..	36675	R. Riverin, 55 Rue de la Couronne.	3 "	45	" " ..
" 22	" ..	36676	" " ..	3 " .	45	" " ..
			DISTRICT OF ST. HYACINTHE—			
Dec. 7	Canned Soup ...	38859	J. P. Paul, Sorel.....	3 tins.	45	The West Lorne Canning & Evap. Co., West Lorne, Ont.
" 9	" ..	38860	L. E. J. Choquette, Farnham..	3 " .	54	H. J. Heinz Co., Pittsburgh.
" 10	" .	38861	R. Goold, St. Jean	3 " .	30	Armour, Ltd., Toronto.....
" 20	" ..	38862	A. McLean & Riddle Bros., Danville.	3 " .	30	" .....
" 20	" ..	38863	S. L. Gibson, Danville.....	3 " .	45	J. Campbell Co., Camden, N.J., U.S.
" 20	" ..	38864	A. J. Hudson, Richmond.....	3 "	45	" " ..
" 21	" ..	38865	B. E. Goyette, Magog	3 " .	30	Simcoe Canning Co., Simcoe.
" 21	" ..	38866	H. Chamberlain, Magog.....	3 " .	15	W. Paul, Agt., Montreal....
" 21	" .	38867	W. Murray & Co., Sherbrooke.	3 " .	45	Libby McNeill & Libby, Chicago.
" 25	" ..	38868	Thos. Hebert, St. Hyacinthe..	3 " .	45	J. Campbell Co., Camden, N.J., U.S.

SESSIONAL PAPER No. 14

CANNED SOUP.

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.					No. of Sample.
	Condition of		Acidity of Strained Filtrate (as Acetic)	Metallic Contamination.	Remarks.	
	Can.	Contents.				
J. C. FERGUSON, INSPECTOR—*Concluded.*						
			p. c.			
Davies condensed soups, mock turtle.	Good	Good	Trace	None	Beef, barley, turnips, carrots, &c.	39605
Savoy soups. Condensed mock turtle.	"	"	Slight	"	Beef, jellied	39606
Campbell's condensed mock turtle soup.	"	"	"	"	Beef, &c.	39607
E. BELAND, INSPECTOR.						
	Fair	Good	Slight	None	Beef, &c.	36667
	"	Fair	0·098	"	Tomato	36668
	Good	Good	0·061	"	"	36669
	"	"	Trace	"	Clear broth	36670
	"	"	"	"	Beef, &c.	36671
	"	"	Neutral	"	Chicken, parsley, rice and onions.	36672
	"	"	Slightly	"	Barley, beans, peas, carrots, turnips, potatoes, &c.	36673
	"	"	Trace	"	Peas	36674
	"	"	0·077	Trace tin	Tomato	36675
	"	"	Trace	None	Beef, rice, celery, curry, &c.	36676
J. C. ROULEAU, INSPECTOR.						
'Lorne' brand chicken	Good	Good	Trace	None	Chicken and broth	38859
'Tomato'	Fair	"	0·225	Trace tin	Tomato	38860
'Mock Turtle'	Good	"	Trace	None	Beef, vegetables	38861
'Chicken'	"	"	Neutral	"	Chicken, rice, parsley	38862
'Julienne'	"	"	Trace	"	Beef broth and chopped vegetables.	38863
'Ox Tail'	"	"	"	"	Oxtail, barley, vegetables, &c.	38864
'Chicken'	"	"	Neutral	"	Chicken	38865
'Potato'					Potato tablets, collected by mistake.	38866
'Mock Turtle'	Corroded	Fair	Slightly	Trace tin.	Beef, &c	38867
"	"	Good	"	"	"	38868

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF MONTREAL—			
1909.						
Dec. 1	Canned Soup ...	40351	James Duncan, Lachine, P.Q.	3 tins.	45	Joseph Campbell, Camden, N.J., U.S.
" 8	" ..	40352	Gravel Freres, St. Catherine St. W., Montreal.	3 " .	90	Franco Am. Food Co., Jersey City Hights, N.J.
" 8	" ..	40353	R. Walsh, Cor. St. Genevieve & Dorchester St., Montreal.	3 " .	30	Van. Camp Packing, Indianapolis, Ind.
" 8	" ..	40354	Davies Ltd., Chaboillez Square, Montreal.	3 " .	15	The Wm. Davies Co., Ltd., Toronto.
" 14	" ..	40355	P. Daoust, St. Anne de Bellevue, P.Q.	3 " .	30	Campbells.. ....
" 14	" ..	40356	" " ..	3 " .	45	Armour's, Ltd., Toronto....
" 15	" ..	40357	J. E. Desaulniers, 1121 St. Lawrence B., Montreal.	3 " .	25	" " ....
" 16	" ..	40358	P. Simard, St. Jerome, P.Q...	3 " .	45	Campbells. ... .
" 21	" ..	40359	A. Girard, 293 St. Antoine St., Montreal.	3 " .	25	W. Clark, Montreal... .....
" 21	" ..	40360	Beauvais & Lalonde, 482 St. James St., Montreal.	3 " .	60	Heinz..... .....
			DISTRICT OF OTTAWA—			
Nov. 24	Canned Soup. ..	42846	C. B. McLean, Ottawa.....	3 tins.	30	The Wm. Davies Co., Ltd., Toronto.
Dec. 4	" ..	42847	Ellis Bros., Ottawa	3 " .	45	Unknown.... .....
" 6	" ..	42848	C. Moreland, Bank St., Ottawa	3 " .	35	The Wm. Davies Co., Ltd., Toronto.
" 6	" ..	42849	A. L. Pinard & Sons, Ottawa..	3 " .	75	Hudon Hebert et Cie, Montreal.
" 11	" ..	42850	Bennett & Code, Carleton Place	3 " .	40	Unknown..... .....
" 15	" ..	42851	Kavanagh Bros., Ottawa.....	3 " .	90	Crosse & Blackwell, London, Eng.
" 15	" ..	42852	A. E. Rea Ltd., Ottawa.	3 " .	37	Unknown..... ....
" 15	" ..	42853	C. Moreland, 184 Sparks St., Ottawa.	3 " .	75	Henri Jonas, Montreal.....
" 16	" ..	42854	W. Hyndman, Smith's Falls ..	3 " .	38	Robertson Nichole & Co., Smith's Falls.
" 18	" ..	42855	P. Lamoureux, Ottawa...	3 " .	38	Unknown..... ....
			DISTRICT OF KINGSTON—			
Nov. 29	Canned Soup. ..	42762	P. A. Haffner, Kingston	3 tins.	38	Libby McNeill & Libby, Chicago, Ill.
" 29	" ..	42763	J. McCulla, Kingston..... ...	3 " .	30	W. Symington Co., Bowdan Marborough, Eng.
" 30	" ..	42764	A. Glover, Kingston..... ...	3 " .	45	H. J. Heinz, Pittsburg ...
Dec. 1	.. ..	42765	Wallbridge & Clarke, Belleville, Ont.	3 " .	45	Campbell, Camden, N.J. ...
" 1	" ..	42766	" " ..	3 " .	45	Van Camp, Indianapolis, U.S.

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CANNED SOUP.

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.					No. of Sample.
	Condition of		Acidity of Strained Filtrate (as Acetic)	Metallic Contamination.	Remarks.	
	Can.	Contents.				
J. J. COSTIGAN, INSPECTOR.						
			p. c.			
Campbells 'Mock Turtle'	Good	Good	Trace	None	Beef, &c	40351
" "	"	"	Slightly	"	"	40352
" "	Fair	Fair	"	"	"	40353
" "	Good	Good	"	"	Beef, turnips, carrots, barley, &c.	40354
'Consomme'	"	"	Trace	"	Clear broth	40355
'Tomato'	"	"	Slightly	"	Tomato	40356
'Mock Turtle'	Corroded	Fair	Trace	"	Beef, &c	40357
'Ox Tail'	Fair	"	"	"	Beef bone, barley, &c	40358
'Mock Turtle'	Corroded	Good	Slightly	"	Beef, &c	40359
'Tomato'	Fair	Good	0·054	"	Tomato	40360
J. A. RICKEY, INSPECTOR.						
Davies 'Mock Turtle'	Good	Good	Trace	None	Beef, turnips, barley, &c	42846
Campbells 'Mock Turtle'	"	"	"	"	Beef, vegetables	42847
Davies 'Mock Turtle'	"	"	"	"	Barley, carrots turnips,&c.	42848
Franco Am. 'Mock Turtle'	"	"	"	"		42849
Van. Camps 'Mock Turtle'	Corroded	Fair	Slightly	"		42850
Crosse & Blackwell 'Mock Turtle'.	Good	Good	"	"	Pork and vegetables	42851
Campbells 'Mock Turtle'	Fair	Fair	"	"	Beef and vegetables	42352
'Mock Turtle'	Good	Good	Trace	"		42853
Libby's 'Mock Turtle'	Fair	"	"	"	Beef and vegetables	42854
Armours 'Ox Tail'	Good	"	"	"	Beef, bone and vegetable	42855
JAS. HOGAN, INSPECTOR.						
	Good	Good	Slight	None	Vegetables, all sorts	42762
					Collected by mistake. Soup powder, tomato.	42763
	Good	Good	Acid	None	Tomato	42764
	"	"	"	"	"	42765
	"	"	0·046	"	Clear broth	42766

BULLETIN No. 204—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF KINGSTON—			
1909.						
Dec. 1	Canned Soup...	42767	Hugh Crozier, Cobourg..	3 tins.	38	Libby McNeill & Libby, Chicago, Ill.
" 1	" ..	42768	N. Burnet, Cobourg.....	3 " .	38	Campbell, Camden, N.J.....
" 1	" ..	42769	J. Curtis, Port Hope.....	3 " .	38	" ..
" 2	" ..	42770	S. A. Oke, Peterboro.....	3 " .	30	Davies Co.. Toronto. .....
" 2	" ..	42771	R. A. Dutton, Peterboro	3 " .	30	" .....
			DISTRICT OF TORONTO—			
Dec. 1	Canned Soup. ..	41411	J. A. Brown, Collingwood....	3 tins.	25	T. Long Bros., Ltd., Collingwood.
" 3	" ..	41412	McLauchlan & Sons Co., Ltd., Owen Sound.	3 " .	30	The Armour Canning Co., Chicago, U.S.
" 8	" ..	41413	J. H. Marshall, Niagara Falls.	3 " .	45	The Van Camp Packing Co., Indianapolis, U.S.
" 16	"	41414	The W. H. Merriman Co., St. Catharines.	3 " .	30	Joseph Campbell Co. Camden, N. J., U. S.
" 18	" ..	41415	W. Joyce, Oakville....	3 " .	35	Wm. Clark, Montreal. . ....
" 21	" ..	41416	The Wm. Davies Co., Ltd, Toronto.	3 " .	30	Vendors... ....
" 21	" ..	41417	Perkins Ince Co., Ltd., Toronto	3 " .	45	Aylmer Canning Co., Ltd., Aylmer.
" 22	" ..	41418	J. W. Schultz, Toronto.....	3 " .	30	The F. R. Lalor Canning Co. Ltd., Dunville.
" 23	" ..	41419	Fred. Cox, Toronto	3 " .	45	H. J. Heinz Co., Pittsburgh.
" 23	" ..	41420	Grand Valley Produce Co., Toronto.	3 " .	45	Libby McNeill & Libby, Chicago, Ill.
			DISTRICT OF LONDON—			
Dec. 7	Canned Soup. ..	30874	A. J. Groom, Guelph.....	3 tins.	45	Semson & Co.. Guelph. ... .
" 8	" ..	30875	Dunkee & Co., Berlin.....	3 " .	45	Joseph Campbell Co.....
" 8	" ..	30877	Beck & Schell, Berlin.....	3 " .	45	Jas. Lumbers, Toronto.....
" 9	" ..	30881	A. Beattie & Co., Stratford ..	3 " .	25	William Clark & Co., Montreal.
" 9	" ..	30882	"	3 " .	45	Jas. Lumbers, Toronto .....
" 13	" ..	30895	J. McEwen, Stratford.....	3 " .	30	Stratford Wholesale Grocery, Stratford.
" 13	" ..	30897	P. T. Dean.....	3 " .	35	H. P. Eckert & Co., Toronto
" 13	" ..	30898	O. C. Whitley, Goderich.....	3 " .	30	A. M. Smith, London. .....
" 14	" ..	30900	Sturdy & Co., Goderich.	3 " .	45	Gillard & Co., Hamilton.....
" 17	" ..	44701	Michael Durkin, Mitchell.	3 " .	45	A. M. Smith, London, Ont..

SESSIONAL PAPER No. 14

CANNED SOUP.

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.					No. of Sample.
	Condition of		Acidity of Strained Filtrate (as Acetic)	Metallic Contamination.	Remarks.	
	Can.	Contents.				
JAS. HOGAN, INSPECTOR—*Concluded.*						
			p. c.			
	Good	Good	Trace	None	Oxtail, barley, &c.	42767
	"	"	Slightly acid.	"	Tomato	42768
	"	"	Trace	"	Beef, &c	42769
	Fair	"	"	"	"	42770
	Good	"	"	"	Oxtail, vegetables	42771
H. J. DAGER, INSPECTOR.						
The North Land Mfg. Co., Toronto. 'Mock Turtle.'	Good	Good	Slight	None	Beef, barley, turnips, etc.	41411
Armour's 'Mock Turtle'	"	"	Trace	"	Beef, etc	41412
Van Camp's 'Chicken'	"	"	Neutral	"	Chicken and rice	41413
Campbell's 'Mock Turtle.'	"	"	Trace	"	Beef, etc	41414
Clark's 'Chicken'	"	"	Neutral	"	Chicken, broth	41415
Davies 'Mutton Broth'	"	"	Trace	"	Mutton, barley, turnips, etc.	41416
'Chicken'	"	"	Neutral	"	Chicken and broth	41417
"	"	"	"	"	" "	41418
Heinz Tomato Soup. Contains no benzoate soda or other artificial preservative.	"	"	Acid	"	Tomato	41419
Libby's Premier "Ox Tail"	Fair	"	Trace	"	Beef and bone	41420
T. KIDD, INSPECTOR.						
'Mock Turtle'	Fair	Good	Trace	None	Beef, etc	30874
"	Good	"	"	"	"	30875
'Tomato'	"	"	Slightly	"	Tomato	30877
'Mock Turtle'	"	"	Trace	"	Beef, etc	30881
'Ox Tail'	"	"	"	"	Oxtail and barley	30882
	"	"	"	"	Beef, etc	30895
	"	"	Very slight.	"	Peas, beans, carrots, parsnips, turnips, etc.	30897
	"	"	"	"	" "	30898
'Mock Turtle'	"	"	Trace	"	Beef, etc	30900
	"	"	"	"	Oxtail and barley	44704

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF WINDSOR—			
1909.						
Dec. 6	Canned Soup ...	42653	H. B. Hodgkins, Aylmer, Ont	3 tins.	38	W. Clark, Montreal
" 6	" ..	42659	J. G. Heiter, Aylmer, Ont...	3 " .	40	Van Camp Packing Co., Indianapolis.
" 7	" ..	42663	W. J. Wilkins, Tillsonburg....	3 " .	38	Armour Co., Ltd., Toronto..
" 7	" ..	42665	Stillwell Bros., Tillsonburg....	3 " .	40	Libby's, Chicago
" 8	" ..	42667	G. A. Curtis, Simcoe	3 " .	40	Van Camp Packing Co., Indianapolis.
" 8	" ..	42669	Geo. H. Widner, Simcoe	3 " .	30	Armour Co. Ltd., Toronto..
" 9	" ..	42682	A. L. Vanstone, Brantford....	3 " .	38	Van Camp Packing Co., Indianapolis.
" 9	" ..	42684	J. T. Wallace, Brantford.. ..	3 " .	75	Lipton, Ltd., London, Eng..
" 10	" ..	42687	F. C. Toon, London, Ont.....	3 " .	45	Jos. Campbell Co., Camden, N. J., U.S.
" 10	" ..	42692	T. A. Rowat & Co., London, Ont.	3 " .	45	Columbia Conserve Co., Indianapolis.
			DISTRICT OF MANITOBA—			
Dec. 9	Canned Soup ...	39851	J. O'Hare, Winnipeg	3 tins.	30	The Van Camp Packing Co., Indianapolis, U. S.
" 9	" ..	39852	J. Grant, Winnipeg	3 " .	38	" "
" 9	" ..	39853	A. W. Smith, Winnipeg	3 " .	40	" "
" 10	" .	39854	A. R. Christie, Winnipeg	3 " .	40	" "
" 10	" ..	39855	H. E. Weldon & Co., Winnipeg	3 " .	40	" "
" 13	" ..	39856	J. Paterson, Winnipeg.	3 " .	40	" "
" 16	" ..	39857	Wm. Mahoney, Winnipeg	3 " .	45	" "
" 16	" ..	39858	The Hardy Buchanan Co., Winnipeg.	3 " .	40	" "
" 21	" ..	39859	The Steen Copeland Co., Dauphin.	3 " .	45	" "
" 22	" ..	39860	J. Paterson, Winnipeg	3 " .	40	" "
			DISTRICT OF CALGARY—			
Dec. 10	Canned Soup...	43611	H. W. Ireland Co., Medicine Hat.	3 tins.	45	Van Camp Packing Co., Indianapolis,
" 10	" ..	43612	R. Dunn, Medicine Hat	3 " .	60	" " ..
" 11	" ..	43613	Spencer & Todd, Medicine Hat	3 " .	60	" " ..
" 11	" ..	43614	H. Morrow, Medicine Hat....	3 " .	45	Joseph Campbell Co., Camden, N.J.
" 30	" ..	43615	Hudson's Bay Co., Lethbridge.	3 " .	1.05	Libby, McNeil & Libby, Chicago.
" 30	" ..	43616	Bentley Co., Ltd., Lethbridge.	3 " .	1.05	Crosse & Blackwell, London, Eng.

SESSIONAL PAPER No. 14

CANNED SOUP.

Inspector's Report (Is not an expression of opinion).	Results of Analysis.					No. of Sample.
	Condition of		Acidity of Strained Filtrate (as Acetic)	Metallic Contamination.	Remarks.	
	Can.	Contents.				
JNO. TALBOT, INSPECTOR.						
			p. c.			
Clark's Concentrated 'Mock Turtle.'	Corroded..	Poor.....	Slightly ..	None.....	Mock Turtle.....	42653
'Mock Turtle'	Fair.....	"	Trace.....	"	"	42659
Savoy Soups. 'Chicken' Gumbo.	Good.....	Good.....	"	"	Chicken and vegetables....	42663
Libby's Concentrated 'Chicken.'	"	"	Neutral...	"	Chicken and rice.	42665
Van Camp's Concentrated 'Mock Turtle.'	"	"	Slight....	"	Beef, etc.....	42667
Savoy Soups. 'Green Peas.'	"	"	Trace.....	"	Green Peas.....	42669
Van Camp's Concentrated 'Clam Chowder.'	"	"	Slight....	"	Broth and vegetables.....	42682
Lipton's Superior 'Mock Turtle.'	"	"	Trace.....	"	Mock turtle.....	42684
Campbell's Condensed 'Tomato.'	"	"	Slight	"	Tomato.....	42687
Columbia highest grade 'Mock Turtle.'	"	"	" ...	"	Vegetables and beef	42692
A. C. LARIVIERE, INSPECTOR.						
'Tomato'	Good.....	Good.....	Slight	None	Tomato.....	39851
'Mock Turtle'	"	"	Trace.....	"	Mock Turtle.	39852
"	"	"	"	"	"	39853
"	"	"	" . .	"	"	39854
"	"	"	"	"	"	39855
"	"	"	"	"	"	39856
"	" . ..	"	Slight....	"	"	39857
"	"	"	Trace. ...	"	"	39858
"	"	"	" .. .	"	Beef and vegetables.....	39859
"	"	"	Slight	"	Mock Turtle.....	39860
R. W. FLETCHER, INSPECTOR.						
....	Fair.....	Good. ..	Slight....	None.....	Mock Turtle.....	43611
....	Good.....	"	"	"	"	43612
....	"	"	Trace	"	"	43613
....	"	"	"	"	Vegetables.	43614
....	"	"	Slight....	"	Beef and vegetables... ..	43615
.....	"	"	Trace.....	"	Pork, &c.....	43616

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF CALGARY—			
1910						
Jan. 5	Canned Soup...	43617	Hallier & Aldridge, Edmonton	3 tins.	45	Van Camp Packing Co., Indianapolis.
" 5	" ..	43618	J. H. Morris & Co., Edmonton	3 " .	45	Libby, McNeil & Libby, Chicago.
" 5	" ..	43619	Capital Mer. Co., Edmonton..	3 " .	45	W. Clarke, Montreal.....
" 5	" ..	43620	City Grocery Co., Edmonton..	3 " .	75	Franco-Am. Food Co.. Jersey City Heights, N.J.
			DISTRICT OF VANCOUVER—			
1909.						
Dec. 9	Canned Soup...	37778	C. A. Welch, New Westminster.	3 tins.	40	Van Camp Packing Co., Rochester, N.Y.
" 9	" ..	37779	T. S. Annandale, New Westminster.	3 " .	40	" " ..
" 9	" ..	37780	Geo. Adams, New Westminster	3 " .	40	California Fruit Growers' Assoc.
" 9	" ..	37781	West End Grocery, New Westminster.	3 " .	25	Libby, McNeil & Libby, Chicago, Ill.
" 9	" ..	37782	Kelly, Douglas & Co., Vancouver.	3 " .	40	Armours, Ltd, Chicago, Ill..
" 10	" ..	37783	Hudson Bay Co., Vancouver..	3 " .	30	Jos. Campbell Co., New Jersey.
" 10	" ..	37784	Leeson, Dickie Co., Vancouver	3 " .	40	Wm. Davis Co.. ....
" 10	" ..	37785	W. H. Malkin & Co., Vancouver.	3 " .	50	Crosse & Blackwell.... .....
" 10	" ..	37786	Woodwards Dept. Store, Vancouver.	3 " .	30	N. J. Heinz & Co., Pittsburgh, Pa.
" 10	" ..	37787	A. MacDonald & Co., Vancouver.	3 " .	30	W. Clark, Montreal.....
			DISTRICT OF VICTORIA—			
Dec. 10	Canned Soup ..	41584	Windsor Grocery Co., Victoria, B.C.	3 tins.	40	Van Camp Packing Co., Indianapolis, U.S.A.
" 10	" ..	41585	W. Speed, Victoria, B.C	3 " .	35	" " ..
" 10	" .	41586	The Saunders Grocery Co., Ltd., Victoria, B.C.	3 " .	40	Joseph Campbell Co., Camden, N.J.
" 10	" ..	41587	The Saunders Grocery Co., Ltd., Victoria, B.C.	3 " .	35	Wm. Davies Co., Ltd., Toronto.
" 13	" ..	41588	Harrison & McDonald, Victoria, B.C.	3 " .	45	Aylmer Canning Co., Ltd., Hamilton, Ont.
" 13	" ..	41589	Acton Bros., Victoria, B.C....	3 " .	40	Crosse & Blackwell, London, Eng.
" 14	" ..	41590	The West End Grocery Co., Ltd., Victoria, B.C.	3 " .	40	Joseph Campbell Co., Ltd., Camden, N.J.
" 14	" ..	41591	E. G. Bailey, Victoria, B.C...	3 " .	30	The Wm. Davies Co., Ltd., Toronto.
" 14	" ..	41592	D. H. Ross & Co., Victoria, B.C.	3 " .	1.00	Brand & Co., London, Eng..
" 14	" ..	41593	A Pool, Victoria, B.C.....	3 " .	75	Wm. Clark, Montreal.....

SESSIONAL PAPER No. 14

CANNED SOUP.

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.					No. of Samples.
	Condition of		Acidity of Strained Filtrate (as Acetic)	Metallic Contamination.	Remarks.	
	Can.	Contents.				
R. W. FLETCHER, INSPECTOR—*Concluded.*						
			p.c.			
.....	Good.....	Good. ...	Trace.....	None. ...	Beef, &c.....	43617
.....	"	"	Slight....	"	Mock Turtle.....	43618
.....	"	"	"	"	Beef, &c.....	43619
....	"	"	Trace.....	"	"	43620
J. F. POWER, INSPECTOR.						
'Chicken Soup'..... ...	Good.....	Good....	Trace. ..	None....	Chicken and rice.	37778
'Mock Turtle'.....	"	"	Slight....	"	Beef, &c.	37779
"	"	"	"	" . ..	....	37780
"	"	"	"	"	Tomato..... ...	37781
"	"	"	Trace.....	"	... .	37782
"	"	"	"	"	....	37783
"	"	"	"	"	... .	37784
"	"	"	"	"	....	37785
"	"	"	Acid	"	Tomato..	37786
"	"	"	Slight....	"	....	37787
D. O'SULLIVAN, INSPECTOR.						
Van Camp's 'Mock Turtle' Soup.	Good.....	Good. ..	Trace....	None.....	....	41584
Van Camp's 'Ox Tail'. ..	"	"	"	"	Ox tail and barley.....	41585
Campbell's 'Ox Tail'....	"	"	"	"	Ox tail.....	41586
Davies' 'Mulligatawny'...	"	"	"	"	Beef and vegetables.....	41587
Canada first, 'Chicken'...	"	"	Neutral...	"	Chicken and jelly	41588
C. & B. 'Mock Turtle'....	"	"	Trace.. ..	"	....	41589
Campbell's 'Mock Turtle'.	"	"	Slight....	"	.....	41590
Davies' 'Mock Turtle'....	"	"	Trace. ...	"	....	41591
The A 1 'Mock Turtle'...	"	"	Slight....	"	. .. .	41592
Superior 'Chicken'.....	"	"	Trace	"	Chicken and broth.....	41593

APPENDIX Z.

BULLETIN No. 205—ARSENATE OF LEAD.

OTTAWA, March 31, 1910.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I beg to hand you a report dealing with 26 samples purchased as Arsenate of Lead. This collection was made at the suggestion of the Fruit Division of the Department of Agriculture; the Ontario Agricultural College, Guelph, and others interested. Paris Green is specifically named, in Schedule 5, of the Adulteration Act, and has been the subject of four reports by this department (see Bulletins 40, 42, 88 and 158). It was considered that the newer insecticide, which is to some extent replacing Paris Green, should be examined; and the accompanying report will enable agriculturists to form an idea of the commercial article, as purchased by our inspectors.

Instructions were issued quite distinctly, for the purchase of Arsenate of Lead; but certain of our inspectors have not been guided by these, and I find such substances as hellebore, pyrethrum, &c., accepted by the official, instead of Arsenate of Lead. This is particularly the case with the inspectors for Quebec, London and Kingston districts.

In consequence of these mistakes, I find only eighteen (18) samples, true to name.

The methods of analysis used are essentially those prescribed by the Association of Official Agricultural Chemists (see Bull. No. 107, revised, p. 239, Bureau of Chemistry, Washington).

It will be noted that the physical condition in which this article is offered for sale varies from practical dryness to a water content amounting to 49 per cent. As calculated upon the original material; and also upon the dry material, the variations are as follows:—

	Original.	Dry.
Arsenic (As_2O_5)—		
Maximum	29·90	30·90
Minimum	12·44	22·28
Mean	19·57	27·09
Lead (PbO)—		
Maximum	72·10	72·10
Minimum	33·46	62·53
Mean	48·55	66·54

As we have no standards for this article, I am unable to offer any opinion. It is however quite evident that it varies greatly in value, and that legal standards, and limits of variability should be defined.

I beg to recommend the publication of this report as Bulletin No. 205.

I have the honour to be, sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF NOVA SCOTIA—			
1909.						
Dec. 6	Arsenate of Lead (Insecticide).	41766	Nat. Drug and Chem. Co., Halifax, N.S.	1 jar.	15	Vreeland & Co., New Jersey, U.S.A.
" 13	"	41767	T. P. Calkin & Co., Kentville, N.S.	1 lb	20	Niagara Sprayer Co., Middleport, N.Y.
" 13	"	41768	B. H. Dodge, Kentville, N.S.	1 "	25	Merrimac Chem. Co., Boston, Mass.
" 15	"	41769	A. M. Bell & Co., Halifax, N.S.	1 "	25	" "
" 15	"	41770	C. A. Barnstead, Halifax, N.S.	1 "	0	Unknown
			DISTRICT OF NEW BRUNSWICK—			
Dec. 2	Arsenate of Lead (Insecticide).	39608	Nat. Drug and Chem. Co., Ltd., St. John, N.B.	3 pkgs	120	Vreeland Chem. Co., Little Falls, New Jersey, U.S.
" 14	"	39509	R. T. Mack, Fredericton, N.B.	3 "	120	Nat. Drug and Chem. Co., Ltd., St. John, N.B.
1910.						
Jan. 3	"	39610	W. H. Thorne & Co., St. John, N.B.	3 "	75	The Grasselli Chem. Co., Cleveland, Ohio, U.S.
			DISTRICT OF QUEBEC—			
1909.						
Dec. 22	Arsenate of Lead (Insecticide).	36507	L. E. Martel, 91 Rue St. Joseph.	1 lb	25	Lyman's, Ltd., Montreal
" 22	"	36677	J. Masson, 808 Rue St. Valier	1 "	75	W. Brunet & Cie, Quebec
" 22	"	36678	" "	1 "	75	Toronto Pharmacal Co.
" 22	"	36679	" "	1 "	65	"
" 22	"	36680	J. Laroche, 405 Rue St. Valier	1 "	25	Nat. Drug Co., Montreal
			DISTRICT OF MONTREAL—			
Dec. 17	Arsenate of Lead (Insecticide).	40386	Lyman's, Ltd., Montreal	3 jars.	75	Grasselli Chem. Co., Cleveland, Ohio.

* Is not arsenate of lead.

SESSIONAL PAPER No. 14

ARSENATE OF LEAD (INSECTICIDE).

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.									No. of Sample.	Remarks and opinion of the Chief Analyst.
	Moisture in Sample as Received.	Results Calculated on the dry Sample.						Percentage Weights in original Sample			
		Total Arsenic p.c. As_2O_5.	Total Lead p.c. PbO.	Water Soluble Solids.	Water Soluble Arsenic p.c. As_2O_5.	Water Soluble Lead p.c. PbO.	Water Soluble Impurities.	Arsenic.	Lead.		
R. J. WAUGH, INSPECTOR.											
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
.....	0·15	28·75	63·64	1·50	0·05	0·00	1·45	28·75	63·64	41765	
'Niagara' brand.	35·64	28·02	62·53	3·50	0·17	0·00	3·33	18·02	40·29	41767	
'Swift's' brand..	48·82	27·31	68·06	0·50	0·05	0·00	0·45	13·97	34·83	41768	
" .	36·32	26·59	68·42	0·50	0·05	0·00	0·45	16·93	43·56	41769	
Labelled 'National' arsenate of lead.	46·92	30·90	63·83	0·50	0·05	0·00	0·45	16·40	33·88	41770	
J. C. FERGUSON, INSPECTOR.											
....,.....	47·56	29·46	63·83	1·00	0·05	0·73	0·22	15·45	33·47	39608	
....	47·72	30·61	64·01	0·50	0·05	0·36	0·09	16·01	33·46	39609	
Grasselli arsenate of lead.	41·87	24·29	69·71	0·50	0·05	0·00	0·45	14·11	40·53	39610	
E. BELAND, INSPECTOR.											
... .	.....	*	.....	...	... .	.....	....	.....	.....	36507	Labelled 'hellebore.'
... .	.....	*	.. .	... ..	.. .	.....	.....	.....	.....	36677	Labelled 'Persian insect powder.'
....	.....	*	...	.. .	.....	.....	.. .	.... ..	.....	36678	Labelled 'insect powder.'
....	.....	*	....	.....	.....	.....	.....	.....	.....	36679	Labelled 'Persian insect powder.'
.....	.	*	.... .	.....	.....	.....	.....	.....	.....	36680	Is hellebore.
J. J. COSTIGAN, INSPECTOR.											
....	44·34	26·59	68·98	0·50	0·05	0·00	0·45	14·80	38·90	40386	

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by the Vendor.
			DISTRICT OF KINGSTON—			
1909.						
Nov. 29	Arsenate of Lead (Insecticide).	41182	Nat. Drug Co., Kingston	1 lb.	25	Vendors
" 29	"	41183	J. A. McFarlane, Kingston	3 tins.	75	International, Toronto
			DISTRICT OF TORONTO—			
Dec. 16	Arsenate of Lead (Insecticide).	41397	The St. Catharines C. S. and F. Co., Ltd., St. Catharines	1 lb.	15	Chem. Laboratories, Ltd., Toronto.
" 20	"	41398	Chemical Laboratories, Ltd., Toronto.	1 "	15	Vendors.
			DISTRICT OF LONDON—			
Dec. 17	Arsenate of Lead (Insecticide).	44706	W. B. Bailey, Mitchell	3 oz.	60	Nat. Drug Co., Toronto
			DISTRICT OF WINDSOR—			
Dec. 13	Arsenate of Lead (Insecticide).	42696	Spramotor Co., London	3 jars.	90	Merrimac Chem. Co., Boston
" 13	"	42697	A. J. Morgan	3 tins.	75	Leggett & Brother, New York.
			DISTRICT OF VICTORIA—			
Dec. 17	Arsenate of Lead (Insecticide).	41629	Wm. Jackson & Co., Victoria, B.C.	1 lb.	25	Henderson Bros., Ltd, Victoria, B.C.
" 17	"	41630	The Brackman Ker Milling Co., Victoria, B.C.	1 "	20	Merrimac Chem. Co., Boston, Mass.
" 17	"	41631	" "	1 "	20	The B. C. Soap Works, Victoria, B.C.
" 20	"	41632	Henderson Bros., Ltd., Victoria, B.C.	1 "	25	Merrimac Chem. Co., Boston, Mass.
" 20	"	41633	D. E. Campbell, Victoria, B.C.	1 "	50	Henderson Bros., Ltd., Victoria, B.C.

* Is not arsenate of lead.

SESSIONAL PAPER No. 14

ARSENATE OF LEAD (INSECTICIDE).

Inspector's Report. (Is not an expression of opinion).	Results of Analysis.										Remarks and opinion of the Chief Analyst.
	Moisture in Sample as Received.	Results Calculated on the dry Sample.						Percentage Weights in original Sample		No. of Sample.	
		Total Arsenic p.c. As_2O_5.	Total Lead p.c. PbO.	Water Soluble Solids.	Water Soluble Arsenic p.c. As_2O_5.	Water Soluble Lead p.c. PbO.	Water Soluble Impurities.	Arsenic.	Lead.		
JAS. HOGAN, INSPECTOR.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.				
.....		*								41182	Is arsenious acid.
.....		*								41183	Labelled 'insect powder.'
H. J. DAGER, INSPECTOR.											
Labelled 'vaneo' brand arsenate of lead.	41·23	22·30	67·69	6·60	0·05	0·73	5·22	12·44	37·74	41397	
.....	0·41	22·30	72·10	3·00	0·05	0·60	2·95	22·30	72·10	41398	
T. KIDD, INSPECTOR.											
.....		*								41706	Labelled 'lead acetate.'
JNO. TALBOT, INSPECTOR.											
.....	49·15	27·31	67·14	1·50	0·14	2·56	1·80	13·89	34·14	42696	
'Anchor' brand pure arsenate of lead.	47·47	29·90	64·38	1·50	0·12	0·36	1·02	15·71	33·82	42697	
D. O'SULLIVAN, INSPECTOR.											
.....	0·40	26·16	66·22	12·50	0·34	9·12	3·04	26·16	66·22	41629	
Swift's arsenate of lead.	0·35	27·31	66·40	2·50	0·08	0·73	1·69	27·31	66·40	41630	
.....	0·29	22·28	71·18	1·00	0·05	0·73	0·22	22·28	71·18	41631	
Swift's arsenate of lead.	0·35	29·90	63·46	2·50	0·11	2·20	0·19	29·90	63·46	41632	
.....	0·25	27·72	66·22	2·00	0·05	0·00	1·95	27·72	66·22	41633	

REPORT

OF THE

MINISTER OF AGRICULTURE

FOR THE

DOMINION OF CANADA

FOR THE

YEAR ENDED MARCH 31

1910

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
PRINTED BY C. H. PARMELEE, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1910

[No. 15—1911.]

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REPORT

OF THE

MINISTER OF AGRICULTURE

1909-10

To His Excellency the Right Honourable Sir Albert Henry George, Earl Grey, Viscount Howick, Baron Grey of Howick, in the County of Northumberland, in the Peerage of the United Kingdom, and a Baronet; Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, &c., &c., Governor General of Canada.

May it Please Your Excellency:

I have the honour to submit to Your Excellency a report of the Department of Agriculture for the fiscal year ended March 31, 1910.

I.—GENERAL REMARKS.

A synopsis of the operations of the department and of its various branches which have been efficiently carried out during the past year ended March 31, 1910, is laid before Your Excellency.

The legislation affecting the department during this period consisted of:—

Chapter 3, 8-9 Edward VII, intituled 'An Act to amend the Animal Contagious Diseases Act.'

Chapter 8, 8-9 Edward VII, intituled 'An Act to amend the Cold Storage Act.'

Chapter 54, 9-10 Edward VII, intituled 'An Act to amend the Seed Control Act.'

By an order in council of May 28, 1909, it was ordered that section 7 of the regulations respecting rabies, established by order in council of August 10, 1905, be amended by adding the words 'in such manner and' after the word 'muzzled' in the last line thereof, so as to read 'muzzled in such manner and during such period as he may see fit.'

Vide *Canada Gazette*, vol. xlii, p. 3385.

By an order in council of July 6, 1909, townships 1, ranges 20 and 21, west of the 2nd meridian, were reserved from sale and settlement, and set apart for the Department of Agriculture to be used as an animals' quarantine and inspection station.

Vide *Canada Gazette*, vol. xliii, p. 153.

By an order in council of November 30, 1909, it was ordered that the disease of tuberculosis be exempted from the operation of sections 3, 4, 11, 36, 37 and 38 of the Animal Contagious Diseases Act, Revised Statutes of Canada, 1906.

Vide *Canada Gazette*, vol. xliii, p. 1604.

By an order in council of November 30, 1909, under the provisions of chapter 11, 3 Edward VII, intituled 'An Act respecting infectious and contagious diseases affecting animals,' the order in council of January 14, 1907, containing regulations relating to animals' quarantine and health of animals, together with all amendments thereto, was rescinded and new regulations substituted therefor. (See Appendix No. 17.)

By an order in council of December 13, 1909, it was ordered that the order in council of September 17, 1908, establishing regulations governing the inspection of meats, be amended as follows, on, from, and after the date hereof, viz.:—

(*a*) The last paragraph of section 15 is repealed.

(*b*) Section 16 is repealed, and the following substituted therefor:—

'When carcases, portions, or products are shipped from any establishment in any case or covering concealing wholly or partially the contents, the case or covering shall have stamped thereon, or attached thereto, the Crown, the words "Canada Approved" and the establishment number.

'Owners or managers of establishments shall supply all necessary help to affix labels and stamps under the supervision of an inspector.'

(*c*) Subsection (*c*) of section 18 of the regulations is repealed, and the following substituted therefor:—

'Carcases, portions, or products thereof, which do not come within the classes already mentioned in this section, shall be permitted entry to an establishment only in accordance with such directions or instructions as may be issued by the minister, but shall in no case be received unless the inspector in charge, or assistant inspector, has been notified.'

Vide *Canada Gazette*, vol. xliii, p. 1771.

By an order in council of March 7, 1910, sections 2, 3, 4, 5, 6, in township 1, range 8, west of the 4th meridian, were reserved and set apart for the purpose of an animals' quarantine.

Vide *Canada Gazette*, vol. xliii, p. 2768.

By an order in council of March 11, 1910, the regulations established by the order in council of May 3, 1907, in virtue of the provisions of 'The Cold Storage Act,' were rescinded, and new regulations substituted therefor. (See Appendix No. 18.)

It was further ordered that this order in council shall come into force on and from the date of the publication thereof in the *Canada Gazette*. (March 26, 1910.)

As Canadian delegate to the International Institute of Agriculture, Rome, the Honourable Arthur Boyer has reported upon the proceedings of the Annual Meeting of the General Assembly held in Rome in December last. (See Appendix No. 21.)

During the past year Canada has participated in the Alaska-Yukon-Pacific Exposition, which was held from June 1 to October 15, 1909, at Seattle.

This exhibition obtained a great success and attracted much attention. Canada's display of natural products and resources being most creditable.

A report on this exhibition by the Exhibition Commissioner will be found as an appendix hereto. (See Appendix No. 19.)

Upon the closing of the Alaska-Yukon-Pacific Exposition, preparations were at once commenced for Canada's participation in the International Exhibition to be held in Brussels, Belgium, and is to open on April 23 next.

With regret I have to report the death of a valued officer of the Patent Branch, Mr. Thomas McCabe, the oldest patent examiner, who had devoted thirty-six years of his life in the service of the department. Mr. McCabe died on November 25, 1909.

I have pleasure in again being able to report bright and encouraging results in the tobacco industry.

The report of the tobacco expert, Mr. F. Charlan, on his labours during the past year, is appended hereto. (See Appendix No. 20.)

II.—ARTS AND AGRICULTURE.

THE DAIRY AND COLD STORAGE BRANCH.

GENERAL.

This branch of my department deals with questions relating to dairying, cold storage and fruits; it is charged with the administration of the Cold Storage Act and Parts VIII and IX of the Inspection and Sale Act (Dairy Products and Fruit); and the officers attached to it supervise the system of cargo and cold storage inspection maintained by the department at British and at Canadian Atlantic ports, and on Canadian railways. The operations of the branch cover four different lines of work, each distinct in some features, but all easily correlated and making a good combination for effective work and economical administration.

The work of the branch is under the general direction of the Dairy and Cold Storage Commissioner. He is assisted by divisional chiefs for fruit, dairying and the markets or inspection services, and a staff of dairy and fruit experts. The Assistant Dairy Commissioner resides at St. Denis (en bas), Quebec. His time is chiefly occupied in delivering addresses on dairying and horticultural subjects throughout the French speaking districts of the Dominion.

A large number of agricultural meetings have been addressed by members of the staff during the year. The topics dealt with include dairying in its various branches, some phases of the fruit industry and other agricultural topics. This is a somewhat important part of the work of the branch.

Over 11,000 letters have been dealt with in the Dairy and Cold Storage Commissioner's office during the year. A large proportion of this correspondence is made up of technical inquiries relating to the various industries covered by the work of the branch.

A detailed report of the work of the branch during the year under review is being prepared by the Commissioner, and it will be published as an appendix to this report, in a separate volume.

DAIRYING.

EXPERIMENTS.

The experimental work in the cooling of milk for cheesemaking, referred to in my last report, was continued during 1909, and some very decided results obtained. The information has been disseminated among the dairymen at numerous meetings throughout the winter, and a summary of the results, with the recommendations based thereon, has been published as Bulletin No. 22 of the Dairy and Cold Storage Series.

COW TESTING ASSOCIATIONS.

The work of the cow testing associations shows a steady and satisfactory growth. During the past year, 48,876 samples of milk have been tested for the members of the associations. In addition to this a large number of farmers, who have been supplied with record forms, are conducting tests on their own account.

Many farmers are also keeping records of the feed consumed by each cow, so that more economical and intelligent feeding may be practiced.

The supervisors of cow testing have been constantly travelling among the factories and farms to assist in the general extension of the work.

It is particularly gratifying to learn of the substantial and definite increases in the yields of milk and fat in many herds, owing to the application of the principles advocated in cow testing.

SHIPMENT OF CREAM TO THE UNITED STATES.

A considerable quantity of cream has been exported to the United States since the new tariff came into force. It has been estimated that the equivalent of 1,000,000 pounds of butter was exported during October, November and December last. The extent to which this trade may grow will depend upon the relative price of butter in both countries.

EXTENSION OF MARKETS.

This division was organized in 1901 for the purpose of consolidating and extending the work my department was doing for the improvement of transportation and marketing facilities for farm and food products. During the first few years the efforts of the division were directed solely to the export trade, but latterly considerable attention has been paid to the domestic trade as well.

One of the first steps taken after the organization of the division was the appointment of a cargo inspector at the port of Montreal, to watch the handling of perishable produce on the docks and to note its condition. It was soon discovered that supervision of this kind was needed in the interests of producers and shippers, and of late years a sufficient number of inspectors have been employed, during the season of navigation, to report on every cargo of perishable produce loaded at the port of Montreal. The next step was the appointment of cargo inspectors at the principal seaports in Great Britain to look after the unloading of Canadian produce, to report its condition when discharged and to keep in touch with the trade generally.

In the season of 1909 the system was very complete; six inspectors being employed at Montreal and five in Great Britain.

CARGO INSPECTION AT MONTREAL.

The Montreal inspectors supervised the handling of perishable freight as it was unloaded from the cars and loaded into the steamers, tested the temperature of the butter before it was placed in the cold storage chambers in the ships, reported the condition of the refrigerator chambers and the ventilation of the holds, and placed thermographs (self-recording thermometers) in refrigerator and cooled air chambers and in the holds in which perishable freight was stowed. Particular attention was also paid to the handling and condition of cheese and butter landed by river boats at Montreal.

CARGO INSPECTORS AT HALIFAX.

During the winter months of 1909-10 one of the Montreal inspectors was transferred to the port of Halifax to look after the loading of apples and other perishable freight, and to place thermographs in the fruit-carrying steamers.

CARGO INSPECTION IN GREAT BRITAIN.

In Great Britain the cargo inspectors at the ports of Liverpool, Manchester, London, Glasgow and Bristol, made complete reports on all Canadian shipments of cheese, butter, eggs, fruit, &c.; the condition in which these products were landed, and the manner in which they were handled while being unloaded. The inspectors also interviewed the importers of foodstuffs from time to time, and reported their views to the chief of the division at Ottawa.

That the importance of this system of cargo inspection is appreciated both by Canadian shippers and importers in Great Britain is shown by letters which I have received during the past year from firms in Montreal and in the old country, expressing their appreciation of this work and asking for its continuance.

INSPECTION OF ICED BUTTER CAR SERVICES.

The usual supervision of the special iced butter cars operated in the provinces of Ontario and Quebec was maintained; and shippers were furnished with a very satisfactory service.

FRUIT

The Fruit Division is engaged chiefly in enforcing the Inspection and Sale Act, Part IX, with reference to fruit and fruit packages, and in compiling a fruit crop report during the summer months. When not employed in actual inspection, the members of the staff are engaged in educational work, organized by the Commissioner's branch or under the auspices of the provincial authorities.

FRUIT INSPECTION.

The staff at present consists of twelve permanent inspectors and sixteen who are employed for about six months during the busiest season. Three permanent and two temporary inspectors were added to the staff during the year.

By an arrangement with my colleague, the Minister of Customs, officers of the Customs Department at Nelson and at Grand Forks, B.C., have been appointed fruit inspectors for the special duty of enforcing the law in connection with fruit imported from the United States.

A rearrangement of the staff of inspectors in 1909 provided for three additional inspectors in the prairie provinces.

The number of inspections made during the past year exceeds those of any previous year. This is due partly to the increase in the staff and partly to improvement in the system.

THE EXPORT TRADE.

Special attention is paid to the export trade and the interprovincial trade in green fruits. For the export trade inspectors are placed at Montreal, Halifax and St. John; and vessels leaving other ports have their cargo specially examined. Apples intended for the interprovincial trade are examined partly at the shipping points, but more frequently at the points of destination in Manitoba and the Northwest. The local inspection is purely incidental. The principal towns and cities are visited by an inspector two or three times, at least, during the season. This acts as a deterrent upon the shippers of fraudulently packed fruit.

CONVICTIONS.

During the season of 1909-10 there have been, so far, over 200 convictions under the Inspection and Sale Act, Part IX. This large number of convictions can be attributed in part to a more rigid enforcement of the Act, but mostly to the peculiarities of the season and the abnormal market conditions in Great Britain.

THE APPLE CROP, 1909.

The prospects in July and August last for the Canadian apple crop were for a light crop of early apples and somewhat above medium for winter apples. At this time buyers were very active, and the crop before the first of September was very largely in the hands of the apple operators. The weather conditions for September

and October were favourable. This, together with the coming into bearing of a large number of young orchards, both in Nova Scotia and Ontario, increased the aggregate much beyond the August estimate. The high prices that were maintained during the earlier part of the season, in all probability did something towards reducing the consumption and at the same time induced the storage of large quantities of inferior grades of apples. In November and December the inevitable slump in the market occurred, which caused heavy losses to a number of shippers, many of whom endeavoured to recoup themselves by lowering the quality of their pack, which may account in part for the large number of prosecutions it was necessary to make this season.

THE NORTHWEST DEMAND.

A feature of the year was the strong demand for fruit in the northwestern provinces.

FRUIT CROP REPORTS.

Five fruit crop reports were issued during the season, giving the condition of the fruit crop up to the date of issue, not only in Canada, but in countries competing with Canadian fruit. These reports are distributed to the public press and to all fruit growers who have sent in requests to have their names placed upon the mailing list.

COLD STORAGE.

CREAMERY COLD STORAGE BONUSES.

Applications were received during the year from 47 owners of creameries for the bonus of $100, which is offered to assist in the erection of cold storages suitable for creamery purposes. Of this number, 18 fulfilled the necessary conditions and received the bonus of $100. The other 29 applications were disallowed on account of poor construction or failure to maintain the proper temperature in the cold storage during the summer, or because the applications were sent in too late.

ICED BUTTER CAR SERVICES.

The usual service of iced butter cars was continued during the year. Since the export trade has fallen off, the cars have been used more largely for local shipments. It is interesting to note that although the export of butter from the port of Montreal has decreased from 573,449 packages in 1904 to 39,443 packages in 1909, it still requires practically the same number of iced cars to handle the butter which is produced in the creameries and dairies. What was formerly exported is now required for home consumption.

ICED CHEESE CAR SERVICE.

It is satisfactory to note that shippers are becoming more insistent in the use of iced cars every year. This service, which is in operation for about ten weeks during the heated period, provides that iced cars shall be supplied by the railways on demand of shippers, for shipments of cheese in carloads. The department pays icing charges

to the extent of $5 per car on a limited number of cars per week. This service was organized to illustrate the advantages of the iced car for cheese. Previous to its inauguration cheese was very seldom shipped in iced cars. It is one of the things which has helped to eliminate the 'heated' cheese that at one time threatened the Canadian trade.

ICED FRUIT CAR SERVICE.

An arrangement for the shipment of fruit in iced cars, which is intended for export in cold storage, has been in force for the past four seasons. Icing charges to the extent of $5 per car are paid on fruit shipments, as in the case of the cheese cars.

CHAMBERS RESERVED FOR FRUIT ON STEAMSHIPS.

I was pleased to continue the arrangement with the Allan and Thomson lines of steamships for the reservation of cold storage chambers for the carriage of early and tender fruits, and to guarantee the earnings of the space. The crop of early fruit and pears was lighter than usual, and the shipments were not large. The fruit that was sent turned out very well, and demonstrated the possibility of a successful trade when the fruit is available.

THERMOGRAPHS.

The use of thermographs has been continued for the purpose of securing records of temperature on steamships, in cold storage, cooled air and ordinary compartments. The total number of records in steamers sailing from Montreal, Quebec and Halifax during the year was 471. The original record is used as a negative, and blue print copies are made and distributed to the steamship companies and other persons interested. A copy of every record is filed in the Exchange Room of the Board of Trade, Montreal.

COLD STORAGE SUBSIDIES.

Contracts have been entered into, during the year, for the erection of cold storage warehouses, with the following firms:—

The J. D. Moore Company, St. Mary's, Ont.

The B. Wilson Company, Victoria, B.C.

Lemon Bros., Owen Sound, Ont.

*The Maritime Cold Storage Company, Lockeport, N.S.

*The Canadian Fish and Cold Storage Company, Prince Rupert, B.C.

*The Hamilton Cold Storage Company, Hamilton, Ont.

*The Dominion Fish and Fruit Company, Quebec, Que.

A contract was made with Scott, Ashton & Company, Morrisburg, Ont., in 1908, but the warehouse was not completed. A new contract was entered into with this firm during the year.

* Warehouse not yet completed.

SEED COMMISSIONER'S BRANCH.

The climatic conditions during the summer of 1909 were favourable to the production of seed of superior quality of practically all our cereal grain and fodder crops in all of the provinces. I am pleased to be able to report, too, that our farmers are now taking more care than formerly in the growing and saving of seed grain and other seeds, as distinguished from grain or seeds that are grown and sold for food or feeding. In this we have made decided progress, and I have reason to believe that it is only the commencement of a far greater advance in our field agriculture, which will result in larger yields per acre of grain and other crops of better quality.

The supply of clover and grass seeds from last year's crop was unusually abundant and of good quality. The growing of clover seed for commerce has become an important industry in the province of Ontario. In addition to supplying the home demand, upwards of one million dollars' worth of this seed is annually exported, principally to European countries. Formerly the best and cleanest seed was exported, and the poorer qualities were retained and sold in those provinces where clover is not grown for seed. For the home trade the quality of clover seed demanded was from medium grade down. Now our Canadian farmers largely demand seed of the best obtainable quality, and the very best of our seed crop is retained for seeding in Canada. This improvement has been brought about by persistent educational work that has been conducted from year to year by this branch of my department, supplemented by the enforcement of the Seed Control Act. To secure further improvement in the quality of these seeds, I have authorized the extension to the clover seed crops of the system of inspection of the growing crops which has heretofore been applied only to the cereal grain crops grown specially for the production of seed. The object of these personal visits on the part of my officers and their assistants to the farms on which clover seed is commonly grown in quantity is primarily educational. The instruction and advice which may be given to a farmer while inspecting his growing crop of seed has been found to be most helpful to him.

The competitions in fields of standing seed grain, which were first inaugurated by this branch in 1906, continue to increase in popularity, and have proven to be an important factor in awakening an interest among farmers in general in the production and use of better seed grain. These competitions are supported by money grants from the provincial departments of agriculture, and are conducted by the agricultural societies. My officers, located in the different provinces, have assisted the agricultural societies in organizing them, and, at the request of the provincial departments of agriculture, have taken over and assumed full responsibility for organizing a corps of competent judges whose services are made available to the agricultural societies free of cost to them. With this work, assistance has been given during the past year to three competitions in the province of Prince Edward Island, six agricultural societies in Nova Scotia, one in New Brunswick, forty-three in Quebec, forty-nine in Saskatchewan and twelve in Alberta. More than 700 fields of grain were inspected by the expert judges in the provinces of Saskatchewan and Alberta alone, which showed an increase of nearly 50 per cent over that of the previous year.

The seed fairs, which are held during the winter and early spring months, have also increased in number, and the exhibits have been more numerous and of a better quality than in any previous year. They are also arranged for by the district officers of the Seed Branch after the general plan that is followed in the field competitions and in co-operation with the provincial departments of agriculture. In all, assistance was given in organizing and conducting ninety-eight seed fairs, distributed throughout the different provinces during the past year. They have been helpful to the farmers who may desire to purchase good seed, as well as to those who have good seed grain or other seed for sale. They have been most popular in the grain growing areas of the prairie provinces, where during the past season, as shown by our records, more than half a million bushels in all of seed of cereal grains were exhibited for sale, which was an average of more than 6,000 bushels at each of the seed fairs.

Provincial seed exhibitions are now being held annually in nearly all of the provinces. They are usually arranged for and held at some central point, and consist largely of exhibits from the farms of the best seed growers within the province. I have thought it wise to give encouragement to these seed exhibitions of a provincial character with direct money grant, which I have authorized to be paid on the basis of 50 per cent of the moneys spent in prizes, the total not to exceed $250.

The Canadian Seed Growers' Association has done and is doing excellent educational work. This association was organized by my department several years ago, but it is now under separate management, none of its officers being officers of the department. It has now among its members many of the most progressive farmers of Canada, who make a specialty of growing superior seeds and increasing their supply in quantity for their own use and to sell in the district where they live. It has done a great deal of valuable demonstration work at the larger agricultural exhibitions and elsewhere, to make clear the methods that are employed and the advantages that accrue from the definite system of seed selection that is practiced by the members of the association. I have been pleased to support this useful organization with money grants sufficient to enable it to carry on its educational work.

Nearly all of the field root and garden seed used in Canada is imported. The greater part of it is grown in European countries under climatic conditions which differ materially from our inland climate, and with labour that is cheaper than is obtainable in Canada. We are not as yet in possession of conclusive results from definitely planned experiments, to make clear the extent of the advantages that may accrue from having our supplies of these seeds grown and selected for our soil and climatic conditions. The results of experiments that have been conducted, however, seem to indicate that better crops were obtained from seed that was home grown. With a view to secure information as to what kinds of these field root and garden seeds might be grown and matured in quantity for commerce, I authorized my Seed Commissioner to arrange for some preliminary experiments in growing seeds of these crops, to be conducted in the county of Waterloo, Ont., by an agriculturist who had had long experience in growing these seeds in Germany. I am pleased to be able to report that these preliminary experiments have given highly satisfactory results

during the first two years, and I am hopeful that the work of growing seeds for these crops may gradually be taken up by other farmers and specialists who may be competent to select and produce high-class seed for all of these crops that can be successfully grown and matured in our climate.

The improvement of crops by seed selection and the testing of seeds by laboratory methods has been the objective work of this branch during the past eight years. Work of a similar kind has been done in Europe during the past forty years or longer. In formulating the plans for this work, my officers have benefited from the experience of experts in Germany, France and other countries who have spent many years at that work. Last year I authorized the Seed Commissioner to spend two months in Europe for the purpose of studying the methods that are there employed in the different countries in the selection of seeds and the control of the trade in agricultural seeds. A great deal of new and valuable information has been obtained as to the methods that are being employed and the results that have been obtained from the work of seed selection, detailed information as to which was presented by the Seed Commissioner before the Committee on Agriculture and Colonization, under the subject, 'Swedish Methods of Crop Improvement.' The work of seed testing as it is done in Europe differs only slightly from that which is practiced in our own seed laboratories, and in only a few instances has it been found necessary to make alterations in the system and apparatus which had heretofore been employed. These changes have already been made in a way so as not only to increase the efficiency of the work in seed testing but also the capacity of our seed laboratories per unit of help employed.

The commerce in farm and garden seeds has continued to improve. It is gratifying to be able to report that the work of my departmenet in attempting to bring about such improvement has met with the hearty support and co-operation of practically all of our seedsmen. While it is recognized that the educational work which is being conducted by this branch is of greatest value, the Seed Control Act has done much to supplement educational effort, and has been effective in restricting the distribution of agricultural seeds that are badly contaminated with noxious weed seeds. This Act is appreciated by farmers who purchase their seed, particularly grass and clover seeds, and they have not failed to express their approval. By resolutions from agricultural societies, institutes and clubs, they have, during the past year or two, requested that this Act be strengthened by amendments dealing with the vitality of all kinds of seeds, and requiring a uniform system of grading grass and clover seeds according to fixed standards of quality.

Investigation work has been conducted in the seed laboratory during the summer months of the past three years, with a view to secure information as to the quality, in respect to germination, of seed corn, field root and garden seeds that are sold throughout Canada. For that purpose, samples of the various kinds of seeds have been purchased from lots exposed for sale in the different towns and villages in all parts of Canada, and forwarded to the seed laboratory by the seed inspectors. During the past season this work has been conducted on a more extensive scale than during the previous years; 2,527 samples have been collected and tested. The results are

valuable in showing the condition of the trade, in furnishing information desired in fixing the percentage germination standard for good seed of various kinds, and also in framing a workable amendment to the Seed Control Act previously referred to. Thirty-three per cent of these samples were found to give a percentage germination which was highly satisfactory, 49 per cent ranged between the percentage standard fixed for good seed of the kind and two-thirds of that standard, while 18 per cent of them were below two-thirds of that standard and are considered inferior.

The amendment to the Seed Control Act, which requires that seeds of cereals, grasses, clovers, forage plants, field root and garden vegetables offered for sale must be capable of germinating in the proportion of at least two-thirds of the standard recognized for good seed of the kind, unless each package containing the seeds is clearly marked, showing the percentage of the seeds that is capable of germination, is now in force, and will prove to be a safeguard to the users of seeds the vitality of which is difficult to judge from general appearance. I have been pleased also in the amendment to include alfalfa seed with the other grass and clover seeds which are dealt with particularly in the Act, and am hopeful that during the ensuing year I shall be able to introduce a further amendment to the Act that will secure uniform definite grades based on the actual quality of these grass and clover seeds.

I regret to have to report that it has been found necessary again during the past year to lay complaints before the court on account of violations of the Seed Control Act on the part of a few seed vendors. The object of the Act has been obtained in the main, however, by education and moral suasion; but where this has been found to be ineffective, I have not hesitated to authorize the more stringent methods provided in the Act.

Noxious weed seeds in ground feeding stuffs and screenings from commercial grain, which are distributed for the purpose of stock feeding, have been the cause for some serious complaints during the past year. Investigation thus far would seem to indicate that the causes for these complaints are restricted quite largely to the province of Ontario, where the screenings from the cereal grains grown in the prairie provinces, after being recleaned at the large elevators on Lake Superior and elsewhere, are marketed. A further investigation into these conditions is being conducted by my officers, and if it is found practicable to secure legislation that may be applied in all the provinces and that may serve to restrict the distribution of noxious weeds through this source, I shall endeavour to secure an Act for that purpose.

SEED TESTING FOR FARMERS AND SEED MERCHANTS.

In addition to samples of seeds which have been taken by official seed inspectors and tested under the Seed Control Act for the purpose of investigation, 5,240 samples, consisting principally of grass and clover seeds, have been tested at the Ottawa seed laboratory and reported upon to farmers and seed merchants. The number tested and reported upon at the Calgary laboratory was 1,188, the great bulk of which consisted of cereal grains and field root and garden seeds, tested for germination. The number of samples of seed received for test from farmers varies considerably from

year to year. These laboratories are almost indispensable to the farmers of the prairie provinces during the years when their crops are slightly injured by frost. The principal work of the seed laboratory for eastern Canada, as in other countries with similar climatic conditions, has been with grass and clover seeds, and in these seeds the work increased 75 per cent over last year.

Ninety-two thousand copies of *books* and *bulletins* pertaining to the work of the Seed Branch have been published during the past year, and have been or are now being distributed. In addition to these, a large number of circulars containing timely information to farmers and members of the seed trade have been printed and distributed.

The distribution of the book, 'Farm Weeds of Canada,' first edition, which was provided free to public institutions, including agricultural organizations and rural schools, has been completed, and the supply of the first edition is now almost exhausted. To meet the urgent demand from individuals for this highly illustrated and costly publication, it was found necessary to issue *a revised edition*. This is somewhat enlarged, and is strongly bound in cloth and printed in eleven-point type on good paper. It contains 180 pages of text and is illustrated by 71 full page coloured plates of noxious weeds and five full page plates showing 100 species of weed seeds, natural size and enlarged. Owing to the extraordinary expense in printing the coloured plates, as contained by this book, it was considered unwise to include it among those publications of this department which are distributed generally and free of charge. The nominal price of one dollar per copy has been fixed for its sale, and it is to be obtained, by single copies only, through the Superintendent of Stationery of the Government Printing Bureau, Ottawa.

LIVE STOCK BRANCH.

While the usual work of this branch has been carried on as formerly, the sheep raising industry which has, for some time, been in an unsatisfactory condition, was made, during the past year, the object of special attention.

It is a regrettable fact that, during the past decade, the number of sheep in the Dominion has been steadily growing less, and this despite the fact that other classes of farm stock have shown an increase, reasonably proportionate to the growth and prosperity of the country. This decrease in numbers of what is perhaps the most generally useful and profitable of all farm animals is attributed by different observers to a variety of causes, such as the low price of wool, the prevalence of dogs in eastern Canada and of predatory wild animals in the west, the uncertainty of the mutton market, due to alleged combinations among buyers, and the growth of the dairying industry and other lines of agricultural specializing. While each of these conditions has doubtless had its effect in discouraging the keeping of sheep, the principal reason for the retrogression is, beyond question, the fact that breeders of pure-bred sheep having established a profitable trade with the United States, especially for rams, have almost entirely ignored the possibilities of the industry in Canada.

The result of this has been the far too general use by ordinary farmers of common grade rams. As a consequence there has been a falling off in quality, and therefore a lessening of profits and a reduction not only in the size but in the number of grade flocks.

During 1908, as mentioned in my last report, a distribution of pure-bred rams was made by means of auction sales in Nova Scotia and Prince Edward Island. The eagerness with which the sheep were purchased and the benefits that locally accrued to the industry were so marked, that work was in the autumn of 1909 extended to several other parts of the Dominion.

For this latter series of sales the co-operation of breeders of pure-bred flocks was secured. This was the more easily obtainable because of the fact that, owing to the quarantine of thirty days imposed by the United States authorities on Canadian breeding sheep in June, 1908, large numbers of valuable animals were left in the hands of breeders. This condition, largely due to their own want of foresight in neglecting the development of a home market, rendered them much more willing to supply sheep for our sales than they would otherwise have been. The work of holding the sales was performed by my officers, and all expenses, including transportation, were borne by the department, while the breeders simply contributed the stock and received the full selling price. Sales were held in Ontario, Quebec, Prince Edward Island and British Columbia. In Ontario the sales were confined to the Upper Ottawa valley, where much of the country is admirably adapted for mutton production. Across the river in Quebec three auctions of rams took place. Further east in that province, sales were held on both sides of the St. Lawrence river. Three sales were held on Prince Edward Island, and one carload was disposed of in British Columbia. In all, 400 pure-bred sheep were placed within reach of farmers who wished to improve their flock.

The prices obtained varied very widely with the quality of the stock, which was not in all cases of the best, some breeders being apparently of opinion that anything was good enough for Canadian buyers, and also with the different districts. It was very noticeable that in localities where the home flocks were of fair quality, farmers were willing to pay reasonably good prices for good animals, while in the more backward districts even the best sheep were liable to go at mutton figures. This fact in itself constitutes a valuable object lesson, showing, as it does, the possibilities likely to follow an energetic and systematic campaign having for its object the dissemination of good blood in communities which, while well adapted for sheep raising, have never had the opportunity of realizing the advantages to be derived from the use of high-class males.

It is gratifying to know that, speaking generally, the efforts of the department were appreciated, and that in the event of similar sales being held this year the demand is likely to be greater than ever before. Owing to the removal of the United States quarantine, however, it is doubtful whether our breeders will be sufficiently far-sighted to assist the department by contributing any great number of good sheep.

The reinspection of French Canadian horses as foundation stock for the new Stud Book was completed during the year. In several remote districts not pre-

viously visited by the commission a considerable number of horses were examined. The Stud Book has now been closed to all except the offsprings of duly registered stock and to such individual stallions of other breeds as may be specially approved by the association. With the view of encouraging the owners of typical French Canadian horses to perpetuate the most desirable strains, I arranged, through the association, to give a number of prizes for the best specimens exhibited at a special show held in connection with the St. Hyacinthe Exhibition. At these special shows, of which this is the second, held under the auspices of the branch, half of each award is withheld for a year, and then paid only on condition that winning stallions have been retained in the province and winning mares have been bred to winning horses of the breed.

Owing to the scarcity of good stallions in the province, it was decided at the Annual Meeting of the Association, held in Montreal in February last, to admit to registration in the French Canadian Stud Book during the next five years such stallions of the Thoroughbred, Morgan, Standard-bred and Hackney breeds as might be approved on inspection by a special committee named for the purpose.

The work of officially testing the milk production of pure-bred dairy cows for the Record of Performance has made steady growth during the year. Besides the appointment of an additional regular inspector, it has been found necessary to engage temporary inspectors in some of the distant provinces. The work is now going on in all provinces except Manitoba and Saskatchewan. Report No. 2, containing the records of cows that have qualified since July, 1908, has been published for distribution.

Educational work according to the system in vogue in the past has been continued during the year. Lecturers, principally on live stock subjects, were supplied for series of meetings, which, in most cases, were arranged for by the provinces. In the province of Quebec, however, where no special organization for the purpose yet exists, the meetings were arranged for and lecturers supplied by the Live Stock Commissioner.

In these gatherings, which were almost invariably well attended, special attention was given to the subjects of stock improvement, judicious feeding and the growing of fodder crops. Sheep husbandry was made a subject of discussion at these meetings, and the reports indicate that the farmers of Quebec are commencing to take a keen interest in this hitherto somewhat neglected branch of the live stock industry.

The farmers of Quebec are perhaps more directly interested in dairying than in anything else, as was manifested at almost every meeting. Farmers generally are becoming alive to the fact that the production of milk per cow is, in many herds, too low. Each delegation comprised a speaker specially qualified to give expert advice on this subject. At the meetings held in Quebec during February and March of this year it is estimated that fully 10,000 people, mostly farmers, were in attendance.

Although in a majority of the provinces the subjects for discussion are usually selected by the provincial departments of agriculture, the men sent out by the Live

Stock Commissioner are experienced stockmen capable of imparting much useful knowledge on any phase of animal husbandry.

Reporting upon the conditions observed, as they are required to do, lecturers furnish a great deal of information useful for the future conduct of the work.

In many cases the work is conducted in the form of judging schools, which are held at given points for several days each, and for which live animals of various classes and qualities are used for demonstration purposes.

In the eastern provinces the weakness most observed has been the too frequent changing of sires from breed to breed, and the display of too great economy, to put it mildly, in the feeding of stock of all ages, but especially in the case of growing animals.

A common criticism made by speakers east west is the serious neglect of stock raising in grain growing sections. Not only are large quantities of valuable fodder either burned, or otherwise allowed to waste, but farms are becoming foul with weeds and yielding annually less per acre because of reduced fertility. The representatives of the Live Stock Branch insistently advocate the breeding and feeding of more and better live stock.

The branch also supplied during the year many expert judges of live stock for fairs throughout Canada. The usual course was followed in placing at the disposal of fair associations and provincial departments of agriculture the best available men at a cost no greater than if local judges were employed. This results not only in impartial judging, but in the correct placing of the animals in such a way as to teach observant visitors the actual differences between individuals of the same breeds, but of different quality. The educational value of this work is showing itself in a steady improvement from year to year in the exhibits of live stock, more especially at the smaller fairs. This work is not, however, confined to small fairs, but is frequently extended to provincial exhibitions and winter fairs, in many cases all the stock being judged by men supplied by my department.

As is well understood, lecture programmes are prominent features of winter fairs as conducted in the several provinces. The speakers for these have, in a number of cases, been the judges supplied by the Live Stock Commissioner.

The following of this plan has had a marked influence upon the quality of exhibits from year to year, inasmuch as the deficiencies and excellencies of the stock shown are turned to good account upon the platform. Not only are the good and inferior points made the subjects of discussion, but opportunity is taken by the speakers to explain the economic differences between them, and how to breed and feed so as to produce the better kinds. The results of this work as time goes on are easily noticeable in the improved finish of market stock in the provinces where these shows are held.

In addition to supplying judges, financial assistance has been continued to winter fairs and provincial auction sales of pure-bred stock so long as these are not restricted to entries within the respective provinces.

During the year several useful publications have been issued. A special report on the Cattle Trade of Western Canada, by the Veterinary Director General and Live Stock Commissioner, was published early in the year. In this report the various conditions militating against the trade as at present conducted are fully dealt with, and many valuable suggestions for their improvement are offered. These latter are strengthened and supported by statements of personal experience furnished by a number of prominent and successful western stockmen.

In response to frequent demands for information as to where pure-bred animals might be procured, correspondence was opened with all breeders registering pedigrees in the National Records, and others whose names could be secured, and from the returns received, a directory was prepared giving the names and locations of breeders, the number of breeding males and females kept, and the average number of offspring for sale each year. This publication is available to all who ask for it.

In June, 1909, I selected a commission of practical swine raisers from different parts of Canada to visit Great Britain, Ireland and Denmark, to investigate the conditions under which swine are reared and prepared for market. Mr. Spencer, of the Live Stock Commissioner's staff, accompanied the commission as secretary and editor. The commission made a careful study of the methods of farmers and others having to do with the industry, and upon their return prepared an illustrated report. This report, which contains a great deal of information likely to be of value to Canadian raisers of swine, particularly of the bacon type, has since been published, and is available for general distribution.

EXPERIMENTAL FARMS BRANCH.

In no way has the general prosperity of the Dominion of Canada been more clearly shown than in the large increase in the export of agricultural products.

While this is in a great measure due to the rapid settlement of the Northwest, it also indicates a marked improvement in the cultural methods adopted by our farmers, and to this improvement the work of the Experimental Farms has contributed no small share. By correspondence, by the distribution in the form of bulletins of the results of expert investigation of agricultural problems, and by the issuing of annual reports giving the results on the Experimental Farms of tests of all the important farm crops, they have given the farmer a series of lessons which he has not been slow to take advantage of, and the increased production resulting therefrom has given him greater confidence and enthusiasm in the work in which he is engaged.

CROP ROTATION.

The greater attention now being paid to the rotation of crops augurs well for the future. By the adoption of this system, the elements of plant food are economized and the best possible use made of such additions to the soil as humus and other fertilizing elements. The rotations practiced at the Central Experimental Farm have elicited much favourable comment from intelligent farmers, many of whom have been led to follow the systems recommended.

In my visits to the western farms last year, I was impressed with the desirability of conducting a much more extensive series of experiments in rotations than those heretofore carried on, and I have since arranged to have considerable areas of land devoted to this purpose, in order to make the demonstration as convincing as possible.

STOCK RAISING IN THE NORTHWEST.

The rapid increase in stock raising in the Northwest has led to larger experiments with fodder plants, especially with Indian corn and roots, with most gratifying results. Varieties of Indian corn are now available which, while maturing earlier than any of those formerly grown, give almost equally good yields. Roots are also more extensively grown, furnishing succulent food for both dairy and beef cattle.

CENTRAL EXPERIMENTAL FARM.

At the Central Experimental Farm, the crop of spring wheat was a good one, twelve varieties giving an average of over 28 bushels per acre. A new variety of wheat, the Marquis, which ripens from seven to ten days earlier than Red Fife, and is quite equal to the latter in quality and, thus far, superior to it in productiveness, has attracted much attention. A large number of farmers requested samples of it, about 1,500 being supplied with five pounds each, and a few with larger lots, which will give them a good start next year in this variety.

Of twenty varieties of oats tested, the average yield was 57 bushels per acre, while six-rowed barley averaged 52 bushels and two-rowed 43 bushels per acre. Peas gave an excellent crop of 40 bushels per acre, while field roots gave a very satisfactory return, turnips yielding 30 tons and mangels 29 tons per acre. Potatoes did remarkably well, giving a large crop of well-formed and clean tubers.

EXPERIMENTAL FARM FOR THE MARITIME PROVINCES.

At Nappan, N.S., the dry and cold weather of June affected all crops, but this was offset to some extent by the warmth of July and August. Spring wheat averaged 27 bushels, oats 47 bushels, and six-rowed barley 47 bushels per acre. Indian corn, cut green for ensilage, did well, giving about 18 tons per acre. Turnips yielded over 38 tons per acre, while potatoes gave the rather extraordinary return of 407 bushels per acre.

A number of steers are fattened each year at Nappan, and the manure thus obtained is used, together with some artificial fertilizers, in a series of experiments to test their values for different crops.

WESTERN FARMS.

Good work has been done on the farms at Brandon, Indian Head, Lacombe, Lethbridge and Agassiz, in testing alfalfa, clovers, grasses and other fodder plants. Winter wheat has been grown quite successfully at Lethbridge, and it is probable that the area under cultivation for this crop will increase rapidly from year to year.

EXPERIMENTAL FARM FOR MANITOBA.

At Brandon the season opened late, with changeable weather and frosts till early in May, but the favourable weather later matured the crops well, and they were harvested without injury from frosts.

Spring wheat averaged 45 bushels to the acre, and one four-acre field of Marquis gave over 52 bushels per acre. Twenty varieties of oats averaged over 101 bushels per acre, six-rowed barley averaged 65 bushels and two-rowed 55 bushels. The yield of Indian corn was below the average, about 12½ tons per acre.

Experiments have been continued in fattening steers outside without shelter, and the results compared with fattening in the stable. Tests of vegetables and fruits suitable for Manitoba have also been carried on. Mail packages of trees and shrubs and a large quantity of tree seeds have also been distributed, in addition to the regular distribution of varieties of grain and potatoes.

EXPERIMENTAL FARM FOR SOUTHERN SASKATCHEWAN.

At Indian Head the crops of cereals were very good, giving grain of high quality. Barley yielded 51 bushels of six-rowed and 42 bushels of two-rowed per acre. Peas were an excellent crop, giving 46 bushels per acre. Potatoes gave the phenomenal yield of 536 bushels per acre. Alfalfa did well, furnishing a large crop of excellent fodder.

Much valuable information has been furnished the new settler on the proper methods of treating new land to prepare it for crop and to preserve its fertility and moisture-content, many samples of grain have been distributed and packages of trees and shrubs sent out. A large quantity of material has also been prepared for exhibition purposes in foreign countries and in Canada.

EXPERIMENTAL FARM FOR SOUTHERN ALBERTA.

At Lethbridge, two series of trial plots are conducted, one on irrigated, the other on non-irrigated land. Dry weather affected the yields somewhat on the non-irrigated portion of the farm during last season, and the irrigated land gave, in most instances, a considerably higher return.

Information has been given the settler on the growing of winter wheat, tests of varieties of vegetables suitable for Alberta have been made, and a study of the problems in connection with irrigation has been begun, all of which will prove of great value.

EXPERIMENTAL FARM FOR CENTRAL ALBERTA.

The season at Lacombe, although late in opening, was favourable for rapid growth, and crops were most promising up to August 1, when a hail storm injured some of them rather severely. Dry weather later reduced the yield of roots as well.

Experiments were continued in the use of the soil packer, and in the growth of alfalfa in inoculated and non-inoculated soils. Varieties of cross-bred apples, plums and bush fruits have been set out, and plantations of ornamental trees and shrubs made.

EXPERIMENTAL FARM FOR BRITISH COLUMBIA.

Changeable weather during the winter was injurious to clover, and killed the plots of winter wheat. The spring was backward, but better weather afterward made the season a fairly good one.

The crops of cereals were quite up to the average, spring wheat yielding 23 bushels per acre, oats 80 bushels, six-rowed barley 47 bushels, and two-rowed the same. Peas gave over 41 bushels per acre, and Indian corn, cut green for ensilage, a return of 19 tons per acre. Turnips gave 40 tons per acre, and mangels 31 tons.

Potatoes, while not above an average crop, were excellent in quality.

Tests of varieties of vegetables suitable to British Columbia were continued, and the different sorts of apples, plums, cherries and bush fruits in the various orchards on the farm reported on.

NEW FARMS.

Rosthern.—A new farm recently secured for central Saskatchewan consists of over 150 acres of good prairie land, located about one mile east of Rosthern, on the line of the Canadian Northern railway, from which it is in full view.

During the summer of 1909, the land was fenced, and a residence for the superintendent as well as some smaller buildings were erected. Most of the season was devoted to a thorough cultivation of the land, which had become very weedy through neglect and poor farming. A considerable number of trees were planted, especially round the borders of the farm, to act as a windbreak.

It is proposed, during the coming year, to test many varieties of the more important farm crops, and also to adopt such methods of cultivation and rotation as will be useful to that portion of Saskatchewan.

Charlottetown, P.E.I.—The Experimental Farm at Charlottetown is nearly 60 acres in extent, adjoining the city, in an attractive location on the line of railway.

Although the property was not acquired until it was too late to carry on experimental work last season, it has been put into fairly good shape for such work during the coming year. New fences have been erected where required, and preparations made for growing experimental fields of grain and forage crops. Orchards and plantations of small fruits have been planned, and a residence for the superintendent provided, so that everything is in readiness to push the work forward rapidly this season.

SMALLER EXPERIMENTAL STATIONS.

In addition to the nine Experimental Farms already referred to, there are three smaller stations on farms occupied by settlers, where only a portion of their land has been rented for experimental purposes.

One of these is near Kamloops, B.C., where 10 acres have been secured for experiments in growing cereals under dry-farming conditions. The land was ploughed and got into good condition early this year, and about two acres of winter wheat sown. The remainder will be occupied by other important farm crops.

A second station of five acres has been obtained near the southern end of Lake Abitibi, in Quebec, near the Ontario line, adjacent to the Grand Trunk Pacific railway. Winter wheats grown there produced fine samples, and experiments are being tried with spring grain, fodder plants and fruits, including a few apple trees. The agricultural possibilities of this part of the country are as yet but very little known.

A third station of five acres is situated at Fort Vermilion, on the Peace river, 700 miles by mail route north of Edmonton. Some 35,000 bushels of wheat, averaging 24 bushels to the acre, are estimated to have been grown in this district in 1909. The samples obtained from this experimental station were well matured and very heavy, wheat weighing from 63 to 64¼ pounds per bushel; Banner oats, 41½ pounds; barley, 49½ pounds, and peas, 64 pounds per bushel. Turnips yielded over 16 tons, mangels 15 tons and white carrots 12½ tons per acre. Vegetables yielded well. Cross-bred apple trees and plum trees sent from Ottawa made good growth. Currants and raspberries wintered well, as did the hardier sorts of ornamental trees and shrubs.

While the amount of cereals grown in this district is at present limited to that necessary to supply local demands, owing to the lack of transportation facilities, it would seem that, should a line of railway penetrate this region in the future, grain of the best quality could be produced for export.

FIELD HUSBANDRY AND LIVE STOCK.

The work in field husbandry during the past year has been along the lines of: (*a*) methods of soil cultivation, (*b*) values of different crops as grain and forage producers, and (*c*) the study of rotations as means of improving soils and increasing crop returns.

Soil Cultivation.—The aims of the work in soil cultivation are to study (*a*) the best methods of (1) increasing the humus content of the soil, and (2) the retention of that humus where its plant food content will be most certainly and readily available; (*b*) the effect of thorough cultivation upon crop yields, and (*c*) the lowering of cost of cultivation by use of more effective and larger machines.

Comparing Crop Values.—A study is being made of the comparative values of different forage crops, as well as of varieties of each kind of crop as food producers for live stock.

Rotations and Cropping Methods.—For the past eleven years various rotations and their influence upon soil improvement and crop production have been under close observation. It is probably too soon even yet to pronounce definitely upon the comparative values of the different rotations being experimented with, but it is safe to say that, (1) to farm successfully in Canada one must follow a rotation of crops;

(2) such rotation must include some hoed crop, and some leguminous crop as peas, clover or alfalfa; and (3) the shorter the rotation the more rapidly is the land likely to improve in physical condition and fertility.

As rotations worthy of introduction on farms in eastern Canada, the three following may be mentioned:—

'A.'

First year.—Pasture or mixed hay, ploughed in August, worked at intervals all autumn, reploughed or ribbed up in October.

Second year.—Peas and oats, or oats (or barley) and 10 pounds clover per acre.

Third year.—Manured, corn or other hoed crop.

Fourth year.—Grain, seeded down, 10 pounds clover, 12 pounds timothy per acre.

Fifth year.—Clover hay.

'B.'

First year.—Pasture or mixed hay, ploughed in August, worked till October, then reploughed or ribbed up.

Second year.—Corn or other hoed crop.

Third year.—Grain, seeded down, 10 pounds clover, 12 pounds timothy per acre.

Fourth year.—Clover hay.

'C.'

First year.—Clover hay.

Second year.—Corn or other hoed crop, manured.

Third year.—Grain seeded down, 12 pounds clover, 5 pounds timothy per acre.

Rotation 'A' provides a fairly well-balanced supply of feed for milk or beef production. Rotation 'B' is peculiarly well fitted for milk production where some permanent pasture is available. Rotation 'C' is the one best suited to the man having a considerable area of permanent pasture, thus being in a position to devote most of his arable land to the production of crops for soiling or winter feeding.

LIVE STOCK.

Experimental work in feeding horses, beef cattle, dairy cattle, sheep and swine is being continued.

A large number of pure-bred cattle, sheep and swine are kept, and the surplus produce sold for breeding purposes to farmers or sent to one or other of the branch farms.

The work with live stock has been particularly successful during the past year. Every line of work followed has given good results, the returns in many cases being much better than expected.

HORTICULTURAL DIVISION.

The Horticultural Division of the Central Experimental Farm deals with fruit, vegetables, forest trees, and with ornamental trees and shrubs and herbaceous plants. About 40 acres of land are used for fruit and vegetable experiments, 21 for experiments with forest trees, and 65 acres are devoted to an Arboretum and Botanic Garden, of which the Horticulturist is curator. The experimental work of the division thus covers a wide field.

Some of the more important experiments in progress during the past year are the testing of new varieties of fruits advertised for sale so that reliable information regarding them can be furnished fruit growers; the originating of new varieties by cross-breeding, and the growing of seedlings, in order to, if possible, provide new sorts suitable for growing in the many different climates of Canada, and also to furnish varieties covering the season from summer to late winter. Many very promising seedlings have fruited, and these are being propagated for further test. Attention is also being paid to chance seedlings of Canadian origin not yet offered for sale. These are being brought together at Ottawa and tested, with the object of learning how they compare with the named varieties and in the hope of obtaining some useful sorts among them. It has been found that trees of the same age vary much in productiveness, and an experiment is being conducted to learn whether this individuality is retained when young trees are grown from the most productive and least productive trees. An experiment has been in progress since 1896 to determine what results are obtained from early bearing varieties of apples planted much closer than is usually recommended. It would appear from the results so far that, in the colder parts of the country where trees do not live so long as they do where it is milder, they can be planted considerably closer than is recommended for the more favoured sections. There was a good crop of fruit in this experimental orchard in 1909.

Spraying experiments have been an important part of the work of the Horticultural Division for the past nineteen years. In 1909, those experiments undertaken related to the control of gooseberry mildew, apple aphis, and the Colorado potato beetle.

Many varieties of vegetables were tested in 1909, the main purpose being to compare the varieties which had done best in the past with the novelties which are recommended each year. Careful notes are kept so that there will be a record of how each variety succeeds. Much attention has been paid to the potato, and, in addition to the tests with varieties, there were experiments in the selection of strains with more resistance to disease, and promising results have been obtained. During the past two years there have been marked results in a test made to determine the value of a change of seed potatoes. Seed of varieties which had gone through severe drought at Ottawa in 1906, 1907 and 1908, was compared with seed of the same varieties from Nappan, N.S. The Nova Scotia seed gave more than twice the crop of the Ottawa seed. It would appear from the results that, when the vitality of tubers is lowered on account of drought, it will pay well to obtain seed from a cooler and moister climate. It is a common practice in England to obtain seed potatoes from Scotland and Ireland, where the climate is moister and cooler.

An endeavour is being made to develop extra early strains of early varieties of vegetables for use especially in the colder parts of Canada. Peas, beans, corn and tomatoes are being worked with at present, and some very early strains have been obtained.

The apple crop was a good one in 1909, the fruit being clean and little affected by codling moth. There was a medium crop of plums, but very few cherries, the latter fruit rarely giving a good crop at Ottawa. The crops of raspberries, gooseberries and currants were good, and of strawberries medium.

Records are taken annually in the forest belts, of the growth in height and diameter of the different kinds of trees, and the tables published in the annual reports of the Experimental Farms show the increase from year to year.

The Arboretum and Botanic Garden looked very well in 1909, and now that the street cars come out to the Farm many more people see the fine collection of trees, shrubs and herbaceous plants which have been brought together there.

During the past year a bulletin on strawberries was prepared by the Horticulturists, in which are given cultural directions for this fruit, varieties recommended and described, and the results stated of experiments which have been carried on. Three small pamphlets for use in correspondence were also prepared, including information on the Culture of Asparagus, Celery, Ginseng, Mushrooms, Melons and Onions, and How to Make and Use a Hotbed and Cold Frame, Top-grafting, How to Transplant a Tree or Shrub, Protection of Fruit Trees from Mice and Rabbits and Care of Injured Trees.

There has been a large increase in the correspondence of the Horticultural Division during the past year, many of the letters coming from British Columbia, where fruit culture has been receiving special attention during the past few years.

The Horticulturist has devoted considerable time during the past year to attending meetings at the request of various colleges, institutes and societies, and in this way also has been able to bring the work of his division before the people.

THE CEREAL DIVISION.

In spite of the late and unfavourable spring, cereals at Ottawa gave medium crops last season, the general character of the summer weather being propitious. At most of the branch Experimental Farms, crops were unusually fine, and were harvested in good condition. Altogether, the season afforded good opportunities for progress both in the work of originating new varieties of grain and in the testing under various climatic conditions of such sorts as are of established value or of great promise.

Marquis Wheat.

The new, early-ripening, cross-bred variety of wheat which was originated at Ottawa, and was introduced under the name of Marquis, proved remarkably successful in almost all localities last season. As a result, it has come suddenly into

prominence, and seems likely to displace (in the great wheat-growing provinces) most of the other early-ripening sorts. Marquis is a beardless wheat, with rather small, hard, dark red kernels, and with rather shorter straw than most other varieties. It also has the distinct advantage of yielding flour of excellent colour and exceptionally high baking strength. Splendid samples of this variety were produced in many districts, especially in northern Saskatchewan, where on one farm the very high weight of 66¼ pounds per bushel was reached. The largest yield reported was on the Experimental Farm at Brandon, Man., where a field of four acres gave over 200 bushels of grain. A considerable quantity of Marquis wheat was provided for distribution and for sale from the Experimental Farms, but it was found quite impossible to meet more than a small part of the demand. For the coming season a larger acreage will be sown, and it is hoped that very soon this wheat will be obtainable through the usual commercial channels.

Milling and Baking Tests.

A more commodious laboratory and improved apparatus made it possible to carry on the baking tests to much greater advantage and on a larger scale than heretofore. Some of the results obtained are mentioned under the five following headings:—

New Varieties Tested.—About fifty new cross-bred varieties of wheat were tested in the milling and baking laboratories during the winter, besides a number of older sorts grown in various parts of Canada. Among the new varieties, about ten were found which give great promise. Some of these are hard, red wheats, ripening very early and yielding flour of good colour and of such high baking strength as to surpass even the standard Red Fife (grown under the same conditions). These varieties are to be propagated and tested further, both at Ottawa and elsewhere, before any final decisions are reached as to their general utility.

The Effect of Storage on Flour.—The study of this problem was continued, the results obtained bearing out the conclusions of previous years as to the superiority of flour that has been stored for a considerable time, whether kept as wheat or as flour.

Damp Wheat.—Two series of experiments were added to the work previously done on this important problem. These tests confirmed the views expressed last year, that excessive dampness does not necessarily or invariably cause any deterioration in the baking strength of the flour obtained, even though the wheat may have been quite injured in appearance by the moisture.

Artificial Bleaching.—Considerable time was devoted to a careful comparison between new, natural flours and those which had been artificially bleached by nitrogen peroxide (electrically generated). It was found that, while the bleached flours invariably produced paler bread, the bleaching did not sensibly alter the bread-making qualities of the flour in any other respect.

High Quality of Western Wheat.—In the course of the baking tests it was clearly shown, both with commercial flour and with wheat ground in the laboratory at Ottawa, that the bread-making strength of the wheat of 1909 from the prairie provinces was somewhat higher than usual. This is encouraging to all those who are interested in maintaining the high reputation of our western wheat.

Uniform Test Plots at Ottawa.

The uniform test plots at the Central Farm reached, last season, their lowest point in numbers for some time. This was due to the gradual process of elimination of less desirable sorts which has been going on for several years. Meanwhile the propagation of a large quantity of new material (selections from hosts of cross-bred types) has been progressing. About 120 of these are now ready for sowing in the regular test plots. This will very greatly increase the field work in cereals. A similar addition is expected next year. These new sorts consist of wheats, bred chiefly for earliness of bread-making strength, barleys bred chiefly for stiffness of straw and beardless and hulless characters as well as yield, oats bred chiefly for a large yield of hulless oats, and peas bred chiefly for yield. Other problems are also being worked upon, but those mentioned have received most attention during the past few years. While good progress has been made in all the directions indicated, the advances in wheat are of such importance that they are likely to attract the greatest amount of interest for some time to come.

DIVISION OF CHEMISTRY.

Among the more important investigations carried on during the past year, the following may be briefly referred to:—

Soils.

During the past season the work upon a series of typical prairie soils from Manitoba, Saskatchewan and Alberta, has been completed. The data indicate the extreme richness of these soils, more particularly in vegetable matter and nitrogen. A comparative study, however, of cropped and virgin areas shows that a system of farming which is merely grain growing interspersed with fallowing is decidedly wasteful of the humus and nitrogen, and must in time make its effect felt on the crop yields. The adoption of rotations, whereby the land is occasionally put in sod, and the keeping of stock are the means, where practicable, of maintaining the present high productiveness characteristic of the prairies.

Since moisture in these regions is very frequently the determining factor in crop yields, experiments have been undertaken to ascertain the best cultural methods for its conservation. As an example of the results, it may be stated that, by fallowing, amounts varying from 50 to 350 tons of water per acre (to a depth of 16 inches) may be held over for the crop of the succeeding season. The value of 'sub-soil packing' on the moisture-content of the soil has also been studied in northern and southern Alberta. So far the results have not indicated any increased storage of water, that is, over and above that conserved by the well known and long practiced summer fallowing.

Wheat and Flour.

In continuing the study upon the influence of environment on the composition of wheat, some very interesting and instructive data have been obtained from irrigated and non-irrigated areas at Lethbridge, Alberta. Sowing the same wheat (containing 15·25 per cent protein) on both areas, the crop from the non-irrigated land contained 17·69 per cent protein, while that from the irrigated soil, 12·88 per

cent. These results are in accord with those of previous seasons, and indicate very strongly that in the regulation of the vegetative processes by the abundance or otherwise of soil moisture, we have an important factor in determining the gluten content of the grain.

A very considerable amount of investigatory work has been done on the chemistry of bleached flour. It has been shown that, in commercially bleached samples, the amount of nitrate reacting compounds (calculated as nitrogen) may vary from ·2 to ·5 parts per million of flour.

Further, we have found that flour purposely exposed so as to be thoroughly permeated by the air may give the reaction for nitrates, but that no traces of these compounds were detected in flours bagged at the mill.

Experiments have been inaugurated to ascertain the relative bleaching action of light and air. This research is as yet incomplete, but it would appear that, of the two agencies, light is the more potent.

The composition of the straw of wheat as regards dry matter and nitrogen compounds has been determined at various stages in the later development (between flowering and dead ripeness) of the plant. The more important results may be summarized as follows: (1) The percentage of dry matter increased throughout this period, steadily and somewhat slowly until the 'late dough' stage is reached, and then much more rapidly (no doubt by a process of desiccation) as the period of dead ripeness is approached. The percentage of nitrogen in the dry matter of the straw decreases with the age of the plant, but the proportion of this nitrogen in the form of true albuminoids remains fairly constant until the period of ripeness indicated by the hardening of the kernels has been reached. After this stage a marked increase is noticed.

Root Crops.

The nutritive value of the more important varieties of mangles, turnips and carrots as grown on the Experimental Farm, Ottawa, has been determined, the estimations comprising the percentages of dry matter and sugar. The results, as in past seasons, show that very considerable differences in feeding value may exist between varieties of the same class of roots, these differences being the more marked in the case of mangels.

Since 1899, experiments have been conducted with two varieties of mangles towards ascertaining the influence of heredity on the composition of the root. The results from the season of 1909 confirm those of former years, and indicate the potency of heredity as affecting the dry matter and sugar content of the mature root.

The factory value of the three leading varieties of sugar beets—Vilmorins Improved, Klein Wanzleben and Très Riche—has been again determined. The roots tested were grown on seven of the Dominion Experimental Farms, and hence are of wide interest in showing the influence of varying soils on the sugar-content and

purity of the beet. Considered as a whole, the results are most satisfactory, indicating that beets of excellent quality for the production of sugar can be grown at widely distant points of the Dominion.

Dairying.

In connection with certain experimental work carried on by the Dairy Division in making cheese from milk of varying fat-content, a very considerable amount of analytical work has been done. Samples of condensed milks, milk powders, &c., have also been analysed.

Meat Inspection.

During the fiscal year 1909-10, 123 samples from the Meat Inspection Division were examined and reported on. These consisted largely of preservatives, dyestuffs, spices and condiments generally, collected by inspectors at various Canadian packing establishments, and were analysed with the view of determining their nature and the presence of any deleterious compounds.

Correspondence and Samples from Farmers.

The correspondence, both in English and French, continues to increase, and the answering of the numerous questions relating to soils, fertilizers and manures, cattle foods, insecticides, &c., must be regarded as a work of very considerable educational value.

In addition to the foregoing means of rendering direct assistance to the farming community, there has been, as in past years, the analysis or examination of samples of an agricultural character sent in by farmers. Such time as can be spared from the purely experimental work is devoted to the examination of these samples. During the year 946 were received, of which 113 were waters from farm homesteads.

THE ENTOMOLOGICAL DIVISION.

Owing to the growth of the entomological work, and the necessity for its extension along specific lines of inquiry, together with the need of investigation with regard to the diseases affecting field and orchard crops, the work of the joint Division of Entomology and Botany has been divided, and a new Division of Botany created. A new officer, Dr. C. Gordon Hewitt, has been appointed to take charge of the Entomological Division, and it has now been furnished and equipped with a view to meeting the growing demand and necessity for entomological inquiry and the dissemination of information as to the means of preventing and controlling the attacks of insects and other pests. The work of the division includes the study of the life-histories and habits, under the varying conditions which exist in the widely differing regions of the Dominion, of noxious insects affecting farm crops, fruit and fruit trees, forest and shade trees, and also live stock and man himself. The natural and artificial means of control are studied; of the former, it is of especial importance to consider not only the parasitic insects, but also the relation of birds to injurious insects.

During the year certain insects have been the cause of very considerable damage and loss by their attacks. In many parts of eastern Canada, White Grubs have been very destructive to grass land and also to field and garden crops, especially to potatoes. Wire-worms also have been very numerous and destructive in different regions throughout the Dominion. The injuries caused by these insects are frequently due to a wrong method of treatment of permanent grass land when it is turned down to cultivation. In all parts of the Dominion, even as far north as the Yukon Territory, the different species of Root Maggots have been very injurious to certain crops, and attention is being given to these insects to discover the best measures of prevention and control.

Cereals have again suffered in Ontario and Manitoba from the attacks of Grasshoppers, which have been numerous in Quebec also. In Prince Edward Island the Wheat Joint-worm has again been prevalent; the Hessian Fly, on the other hand, has not been reported from many localities. The Pea Weevil still occurs in Ontario, especially in the western counties; but there is no excuse for its presence, as it can be completely controlled by fumigation with carbon bisulphide. The Hop Flea Beetle, which has been a source of serious loss to the hop industry in British Columbia, has not been so serious this year, and its decrease is probably due to the active measures which are being taken to control it, and also to natural means of control.

In addition to the annually recurring pests injurious to fruit and fruit trees, concerning which large numbers of inquiries are answered, certain pests have been more injurious than usual. Aphides or plant lice have been abnormally numerous, and the Oyster-shell Scale appears to have become almost as serious as the Codling Moth in Ontario. In certain regions, especially in Nova Scotia, the Canker Worm has been the cause of very great loss; fortunately, these are insects which can be controlled.

We are threatened with the introduction of the Brown-tail Moth. It has already established itself in certain districts in Nova Scotia, where steps are being taken to prevent its spread. To prevent its further introduction into Canada on European nursery stock, on which it is frequently found and in which manner it was first introduced into the United States, arrangements were made for the inspection of all such stock entering Canada. Over two million plants, fruit seedlings and ornamental plants have been inspected, and more than three hundred nests were discovered and destroyed, indicating the importance of such inspection. The division is devoting special attention to this insect, and I hope that, by taking the necessary steps at the beginning of the threatened invasion, we shall be saved the grave experience of our southern neighbours.

The San José Scale has extended its range slightly in Ontario, owing no doubt to the transference of nursery stock from infested localities within the province. As all, except European stock, is fumigated at the federal fumigation stations before entering Canada, it has not entered any of the other fruit-growing provinces.

With the increased importance which is being attached to the conservation of the forests, greater attention is being given to the study of those insects which attack

and destroy forest trees. Enormous losses are caused annually by the activities of the bark-boring and timber-destroying beetles, and several species have been recorded during the year as causing the destruction of coniferous trees, especially spruce. The depredations of the Larch Sawfly have again assumed very large proportions, and its range now extends from Nova Scotia almost to Winnipeg, through which area it is feared that it will cause the destruction of the majority of the tamarack or native larch trees. From Nova Scotia many reports were made concerning the destruction of the foliage of the birches by a leaf-mining saw-fly, which is a new insect.

The increasing numbers of inquiries for information on apiculture are a pleasing indication of the greater attention that is being paid, especially in Quebec, to the production of honey, which is an important industry capable of great development in Canada.

The supervision of the orchards on the Indian reserves in British Columbia, and the eradication and control of the pests therein on behalf of the Department of Indian Affairs, has been continued, and I am pleased to note that the improvement in the condition of these orchards is giving increasing satisfaction to the neighbouring settlers and fruit growers.

With a view to making the entomological collections of the divisions, which are increasing in size annually, of greater value in naming insects sent in by farmers and students for identification, they are being put into order, and are very representative of the insects of Canada. Exhibits of injurious insects and their injuries are being arranged to make the collections of practical interest and value, in addition to being of scientific assistance to students who, in all parts of Canada, make free use of the facilities so provided.

The Entomologist has visited the different provinces of the Dominion for the purposes of inspection and inquiry in connection with the work of the division, and also to deliver addresses on noxious insects and means of control.

DIVISION OF BOTANY.

The work of this, as a separate division, was begun in July, 1909. The laboratories situated at the Central Experimental Farm are fully equipped with all necessary and up-to-date apparatus and appliances, and are in charge of a competent officer. The facilities afforded, enable him to supply useful and valuable information on all botanical matters in their relation to agriculture, forestry and fruit culture, &c., and also render possible the carrying on of such research as may be required in connection with the investigation and prevention of diseases of field, garden, orchard and forest plants. During the year covered by this report many inquiries were dealt with, which were received from correspondents all over the Dominion. These inquiries related to the identification of plants, the eradication of weeds, the properties of poisonous and other plants. The new Division of Botany, while giving the desired advice in relation to the above inquiries, however, is specially equipped to assist the farmers of Canada concerning the prevention of diseases of plants due to fungus or bacterial parasites. Much original work is necessary in this direction to

save the farmers and fruit growers from the losses accompanying the attacks of plants by these parasitic organisms. Thus the services of the Division of Botany have been called upon in many instances, and numerous specimens of diseased potatoes, cereals, fruits and all other kinds of vegetation have been sent for examination and report. As a rule, the necessary precautions could be suggested after the disease had been carefully studied, and in several cases experiments were undertaken with the view of ascertaining the cause and probable means of prevention of diseases, which were new or but little known. It is gratifying to record the interest which farmers have already taken in this work of the Botanical Division since its enlargement, and it should be widely known that every farmer of the Dominion has now, placed at his disposal a laboratory specially equipped to serve as an inquiry bureau in such cases as have been referred to. It is expected that farmers who have thus obtained useful advice will co-operate and make the work of the Division of Botany more generally useful throughout the Dominion. Besides the investigation of diseases already existing in Canada, there is another important service rendered by the Division of Botany in connection with the safe-guarding of the farmers' interests by keeping a close look-out in order to prevent the introduction of diseases from other countries, or their spread if such introduction has already taken place. Thus the division was instrumental in the timely discovery in closest proximity to Canada (Newfoundland) of the existence of a very serious European potato malady, viz., 'Potato Canker,' which is due to a parasitic fungus that has caused serious losses in countries where the disease was prevalent. By my direction, a bulletin (No. 63) was prepared without delay, which has been widely distributed, giving, with instructive illustrations, a careful advice how an outbreak of this disease is to be met. It may be easily seen, however, that only prompt attention on the part of the farmers themselves to matters of this kind will result in preventing the establishment of this or any other disease that may be accidentally imported into the Dominion of Canada.

Another European disease, occurring in apple, pear, peach, plum, apricot and other fruit trees of similar kinds, has been observed in Nova Scotia, and is receiving careful attention to prevent its spread. The disease produces a peculiar silvery appearance of the upper surface of the leaves. Owing to this peculiarity, it has received the name of Silver Leaf Disease. The fruit growers have been warned to be on the lookout for this trouble, which is readily noticed, and they have been requested to immediately forward specimens of the affected twigs to the Dominion Botanist, for identification and advice. As is the case with diseases in animals, it must be borne in mind that negligence in reporting the signs of any disease occurring in plants may result in its rapid spread, and infection of a whole locality may take place in a very short time. For this reason, great stress has been laid by the Botanist on the point that specimens of diseased parts of any kind of vegetation should be forwarded without any delay to the Division of Botany, when advice will be promptly given.

POULTRY DIVISION.

While the work of this division, during the past year, was for a great part devoted to the carrying on of experiments, much time and attention was also taken up in replying to a large and growing correspondence, and in attendance at agri-

cultural meetings and poultry shows held throughout the country. The more important experiments conducted may be enumerated as follows:—

(1) Continuation of the work, inaugurated a few years ago, of building up prolific egg-laying strains of fowls by breeding only from birds of ascertained merit as egg layers. In this undertaking, trap nests were used as a reliable means of distinguishing the good from the poor layers. The latter birds were discarded, while the former were selected to breed from. Care was taken to mate the selected hens with a male bird from parentage of proved egg-laying worth. This work is unavoidably slow, but, if carefully persisted in, should bring about the desired results.

(2) Noting the effect on winter egg production of rations of different compositions. The best results, up to this time, have been attained by the use of varied rations, the nature of which is shown in the annual reports of this division for the past two years.

(3) Continued trials, during the winter season, of unheated poultry houses with and without cotton fronts. As compared with the older system of heated houses, results so far attained are strongly in favour of the pattern of house into which cold, but fresh, air is admitted through cotton screens.

(4) Experiments in hatching chickens by artificial and by natural means were continued, and data of interest and import were secured. Experimental work has shown that one of the greatest drawbacks to the successful hatching of chickens in early spring, by hen or incubator, is the poor fertility of the eggs. The favourable results so far obtained from the new styles of winter poultry houses with their free circulation of air, lead to the hope that they will prove valuable agents in remedying this defect.

(5) The hopper system of feeding, by which whole or ground grains are constantly kept before the fowls, has proved satisfactory. As a method of feeding chickens running at large in a field, it has been very convenient.

Details of other experimental work will be given in the usual annual report.

GENERAL CROPS OF THE DOMINION.

FIELD CROPS AND LIVE STOCK OF THE YEAR 1909.

The year ending with March, 1910, was in all respects the best in the history of Canada for field crops and live stock.

The area in crops was 30,065,556 acres, and the value of products computed at local market prices was $532,992,100. For the preceding year the area in crops was 27,505,663 acres, and the value of products was $432,534,000.

Wheat, oats and barley gave a value of $289,144,000, which was $80,000,000 more than for the previous year. Hay and clover gave a value of $132,287,700, being $10,403,000 more than in 1908. Rye, peas, buckwheat, mixed grains and flax gave a value of $26,707,000, or $3,663,000 more than in 1908. The hoed and cultivated crops of beans, potatoes, turnips and other roots, corn and sugar beets gave a value of $84,853,000, which was an increase of $6,317,000.

The value of all field crops in Prince Edward Island last year was $9,213,900; in Nova Scotia, $22,319,000; in New Brunswick, $18,150,000; in Quebec, $90,071,000; in Ontario, $200,398,000; in Manitoba, $74,420,500; in Saskatchewan, $97,677,500; and in Alberta, $20,741,000.

In the Northwest provinces the production of wheat increased from 23,457,000 bushels in 1900 to 147,482,000 bushels in 1909, of oats from 16,653,681 to 185,439,000 bushels, and of barley from 3,141,121 to 31,358,000 bushels.

In Ontario the yield of fall wheat last year was 14,086,000 bushels; of spring wheat, 2,176,000 bushels; of oats, 109,192,000 bushels; and of barley, 20,952,000 bushels. The harvest of 1900 gave 21,879,000 bushels fall wheat, 6,539,900 bushels spring wheat, 88,138,974 bushels oats, and 16,087,862 bushels barley.

In Quebec the principal crops were 1,968,203 bushels wheat, 33,536,677 bushels oats, and 2,535,597 bushels barley in 1900, against 1,679,000 bushels wheat, 42,501,000 bushels oats, and 2,604,000 bushels barley in 1909.

In the three maritime provinces the yield of wheat in 1900 was 1,369,000 bushels; of oats, 11,725,000 bushels; and of barley, 385,760 bushels. Last year the yield of wheat was 1,321,000 bushels; of oats, 16,334,000 bushels; and of barley, 484,000 bushels.

Comparing the same years of 1900 and 1909 for animal fodders, the yield of hay and clover and forage crops in the Maritime provinces was 1,356,300 tons in 1900 and 2,395,000 tons in 1909; in Quebec, 2,182,65 tons in 1900 and 4,897,000 tons in 1909; in Ontario, 3,792,000 tons in 1900 and 7,068,000 tons in 1909; and in the Northwest provinces, 999,800 tons in 1900, inclusive of prairie hay, and 296,100 tons in 1909, exclusive of prairie hay.

In the whole of Canada the number of horses on farms in 1909 was 2,132,489; of milch cows, 2,849,306; of other horned cattle, 4,384,779; of sheep, 2,705,390; and of swine, 2,912,509. The census of live stock on farms was taken for the year 1901, when the number of horses was 1,410,515; of milch cows, 2,292,120; of other horned cattle, 3,080,384; of sheep, 2,465,565; and of swine, 2,292,675.

HEALTH OF ANIMALS BRANCH.

The work of this branch has, during the year, been characterized by great activity, and reasonably satisfactory progress has been made in the task of eradicating a number of the more serious diseases affecting the live stock of the Dominion.

The statistics for the year 1909-10, which will be found in the special report of the Veterinary Director General and Live Stock Commissioner, indicate that the aggressive policy now pursued has been effective in securing control of most of the maladies which come under the operation of the Animal Contagious Diseases Act.

To this general statement there are, of course, some exceptions, the most notable being that widespread scourge, Bovine Tuberculosis, of which further mention will

be made. The quarantine system has been strengthened and improved both as regards the importation of animals from overseas and their introduction from the neighbouring republics of the United States and Mexico.

The general efficiency of the veterinary staff has been more than maintained by the operation of the new regulation requiring all candidates for appointment to pass a special qualifying examination in professional subjects. This ruling, which was adopted immediately after the coming into force of the Meat and Canned Foods Act, is working well, and is instrumental in securing for the service a better type of inspector than it was sometimes possible to obtain under the old system of appointment. The higher standard of education now insisted on at the Ontario Veterinary College is also of great value to the department, furnishing as it does an annual draft of capable young veterinarians to fill vacancies and to supply the new officers needed to enable the service to keep pace with the marvellous growth of the west.

Among the diseases dealt with, glanders is perhaps the most important, and it is gratifying to note that the active measures adopted some five years ago have resulted in a marked diminution of its prevalence throughout the Dominion.

The following figures speak for themselves, and in studying them it should be borne in mind that during the first six months that the new policy was in force, no compensation was paid for animals showing clinical symptoms, nor was the policy applied to Manitoba which at that time dealt with the disease under a provincial Act.

Year.	Horses killed.	Compensation.
		$ cts.
1904-05	2,113	147,851 45
1905-06 (5 months)	1,387	108,045 76
1906-07	1,881	142,057 07
1907-08	1,324	102,868 65
1908-09	981	73,386 81
1909-10	626	48,662 68

Dourine or Maladie du Coït still continues to exist among horses in certain districts in Alberta, but to a much less extent than was formerly the case. Owing to its very treacherous and insidious nature, the control of this disease is an exceedingly difficult matter, more particularly among horses kept under range conditions.

Despite the best efforts of my officers, occasional outbreaks come to light, sometimes involving a considerable number of animals, and necessitating the greatest care and exactitude in tracing suspect and contact individuals. A strict inspection of all horses leaving the district in which the disease is known to exist has apparently been instrumental in confining it to Alberta, as no cases have been discovered in the other provinces.

Mange of horses has, to all appearance, been brought under control in the range country, although occasional outbreaks still continue to be detected in other parts of

the Dominion. Among animals kept in domestication, however, the disease is not nearly so difficult to deal with as it is on the range, nor are its effects on the individual properly housed and cared for so serious as they are to the range horse.

The prevalence of mange in cattle is, under the policy of close inspection and quarantine adopted two years ago, steadily decreasing, and there is every reason to hope that its existence on our western ranges will soon be a thing of the past. As with horse mange, this disease is a comparatively trifling one among domesticated cattle, although on the range, where the conditions are all in favour of its rapid dissemination, and where animals suffer from exposure and occasionally, especially in winter, from shortage of feed, it is a very serious matter indeed.

Several isolated outbreaks of sheep scab, fortunately affecting only a very few animals in each case, have been detected and dealt with in Ontario. The Dominion is now apparently entirely free from this troublesome disease, and in this connection it is gratifying to be able to report that the quarantine of thirty days imposed in June, 1908, by the United States authorities on Canadian sheep when imported for breeding, feeding or grazing, was removed in October last, greatly to the satisfaction of such of our breeders as are interested in this trade.

Hog cholera has made its appearance on several occasions during the year, outbreaks having occurred in swill-fed hogs in the environs of Ottawa and Toronto, as also in the vicinity of Cobalt. In every case the disease was promptly brought under control and effectively stamped out.

These rather remarkable outbreaks of what is to all appearance hog cholera, occurring among swill-fed hogs which, so far as can be ascertained, have been in no way exposed to infection, are not uncommon in other countries, and have been made the subject of several very searching and exhaustive investigations, but without any very definite results. A series of experiments on this subject has been for some time in progress at the biological laboratory of the branch but, so far, there is nothing new to report.

A number of small outbreaks of typical hog cholera have also been dealt with in the neighbourhood of New Westminster, B.C., but in these cases it was possible to trace the source of the original infection to animals imported from the United States.

Rabies which, as stated in my last two annual reports, was introduced to Ontario early in 1907, continued to extend over the western peninsula of that province, until the outbreaks became too numerous and alarming to permit of their being controlled by ordinary measures.

As foreshadowed in my last report, I therefore deemed it advisable, in February of this year, to issue a special order providing for the compulsory muzzling, or detention under lock and key, of all dogs in that portion of the western peninsula of Ontario lying west of the eastern boundaries of the counties of York and Simcoe.

In the enforcement of this order, my officers were fortunately able to secure the hearty co-operation of the provincial health authorities, and although, in some districts there has been a tendency to evade its provisions, these have, as a general

rule, been fairly well observed. As an additional precaution, another order was issued early in March, prohibiting the movement of dogs from the area described above. This action was deemed necessary because of the fact that an outbreak which took place last year in Alberta was traced to a dog shipped from the infected district in Ontario. While the disease still appears from time to time in western Ontario, the cases have greatly diminished in frequency since the orders above referred to were put in force, and there is no doubt that if all dogs are kept either muzzled or securely tied up the trouble will very shortly be at an end.

Only one human being has succumbed to the disease, but a great many persons, bitten by dogs either rabid or suspected of being rabid, have undergone the Pasteur treatment either at the Institute in New York or in Toronto, where special arrangements for its application have been made by the Ontario Board of Health. A considerable number of horses, cattle, sheep and swine have died of rabies contracted through being bitten by dogs, the losses suffered by individual owners from this cause being, in some cases, rather serious.

It is to be hoped that the enforcement of the muzzling order will, as in Great Britain, result in the complete eradication of rabies from Canada, although owing to the long land boundary between our territory and that of the United States, in which country the disease always exists to a greater or less extent, the difficulty of keeping it out is greatly increased. In some of the states the wild animals have become affected with rabies, thus adding greatly to the danger of its dissemination, and it is scarcely necessary to dwell on the importance of keeping it in check in Canada as, if it once obtained a foothold among the fur-bearing fauna of our northern forests, its terrors would be enormously increased.

A few outbreaks of Anthrax have been reported, but none of these have been of an alarming character. The policy of inoculating all exposed herds with the preventive vaccine now manufactured at the biological laboratory appears to have been productive of excellent results. The nature of the disease is, however, such that unless the practice of inoculating all the cattle on infected farms is regularly maintained, outbreaks are liable to occur from time to time.

The preventive vaccine for Anthrax, as well as that for Black-quarter, which is also prepared at the laboratory, are supplied to stock owners at five cents per dose, The demand for the former is fortunately small, but the latter is in constant request, and both appear to be giving the greatest possible satisfaction to those using them.

The investigation commenced two years ago into the nature and causes of the disease which under the name of Red-water has for many years become a source of great loss and annoyance to cattle owners in some districts of British Columbia, was unfortunately interrupted by the resignation of the pathologist to whom it had been entrusted. It is now in the hands of Dr. Seymour Hadwen, who, having spent considerable time in similar work in collaboration with Professor Nuttall, of Cambridge University, is especially fitted for the task. His final report is not yet available, but the progress made encourages the hope that, in the near future, it will be possible to recommend such measures as will enable stock owners to successfully combat the disease.

The pathological researches into the nature and treatment of Dourine, which have been conducted by Dr. Watson, at the branch laboratory, established some years ago at Lethbridge, Alberta, are still being continued, much valuable information regarding the disease having been secured in this way.

During the past winter a special arrangement was made with Dr. J. L. Todd, Professor of Pathology at McGill University, whereby his services were enlisted in the effort to ascertain the true nature of the disease of horses, known as Swamp Fever, which annually causes considerable loss in the prairie provinces. Professor Todd was fortunately able to secure accommodation at Macdonald College for the experimental animals required in this work. His report has not yet been received, but from his high reputation and large experience in similar research there is every reason to hope that we will ere long be placed in possession of more knowledge regarding this disease than has hitherto been available.

I regret to report that the peculiar disease known as Hemorrhagic Septicemia has of recent years made its appearance in Canada. This malady, which was unknown, or at least unidentified in America prior to 1898, when a serious outbreak occurred in Tennessee, was first observed (but not recognized) in Canada during the summer of 1902, when several cases occurred among cattle at Bury, in the eastern townships. Since that date it has appeared from time to time in a number of different districts in the province of Quebec, as well as at some few points in eastern Ontario.

For several years after its first appearance the outbreaks were very few in number; in fact in some seasons no cases whatever were reported. During the summer of 1909, however, it was much more prevalent than ever before, and, as the rate of mortality is very high, ranging from 80 to 90 per cent of the animals affected, the losses were considerable, and the alarm among stock owners correspondingly great.

The true nature of the disease is but little understood, although it is supposed to be due to a specific bacillus belonging to the group classed by Lignières as 'Pasteurelloses.' It has not, however, been definitely shown to be contagious, nothing being known regarding the method of infection, and I have therefore so far refrained from bringing it under the operation of the Animal Contagious Diseases Act.

In the event of its ravages continuing during the coming summer, it will, however, in all probability, be necessary to take official action for its control, and at the same time to do all we can in the way of pathological investigation with a view to the securing of further information regarding its true nature and the best way to deal with it.

A good deal of effort has been expended in this direction by the authorities of the State of Minnesota, in which the disease is perhaps more prevalent than in any other part of the continent. In this work the United States Department of Agriculture is now co-operating, and while there is every reason to hope that their united efforts will be successful, I feel that my department should also endeavour to do its part in the matter.

There is another disease in regard to which, although our knowledge of its nature is fairly complete, we have, as yet, no definite policy. The control of Bovine Tuberculosis presents perhaps greater difficulty than does that of any other malady affecting the domesticated animals. So far, no country in the world has been able to deal with it at all satisfactorily, and of the many attempts at legislation which have been made by different communities, almost all have utterly failed, while the benefit derived from the others has been so exceedingly slight as to fairly justify their being also classed as failures.

The subject is, however, one of paramount importance, and although Canada's comparative inaction regarding it has not, as a matter of fact, left her at all behind the more ambitious, but perhaps less cautious, communities above referred to, I feel that it will be necessary for us to adopt in the near future a more aggressive policy than we have hitherto followed.

Exactly what this policy will be has not been decided, but it is hoped that the International Commission appointed last year by the American Veterinary Medical Association, of which Dr. Rutherford is chairman, and which includes among its members, in addition to a number of experienced veterinarians both scientific and practical, medical scientists, public health officers and representatives of the stock breeding, dairying and packing industries, will be able to bring in such a report as will enable me to lay before parliament a plan which will meet with its entire approval.

The disease undoubtedly exists to some considerable extent among Canadian cattle, especially those kept under highly artificial conditions. It also prevails, as evidenced by the returns of the Meat Inspection Division, among swine, particularly in districts where these animals mix freely with cattle or are fed on the by-products of the dairy. If eradicated among cattle, however, it would undoubtedly disappear from among swine, as in them it is, almost invariably, of bovine origin.

The policy of closely inspecting all stock entering Canada from the south, and especially that of testing with mallein all the horses, has rendered necessary the extension of several of the quarantine stations at points on the international boundary. At some of these places, more especially at those where intending settlers enter in the greatest numbers, the accommodation has been very largely increased.

The effective guarding of the boundary in the prairie country is, however, a matter of no little difficulty, and it is hoped that, with the co-operation of other departments interested, it will ere long be possible to make such arrangements as will greatly simplify the task.

A great forward step has been taken in the inauguration of a comprehensive system, having for its object the thorough cleansing and disinfection of all cars used for the conveyance of live stock in Canada. Much time and thought were expended by my officers in the consideration of this matter, which is, needless to say, one of primary importance in the work of eradicating contagious diseases of animals.

After repeated consultations with the various railway authorities, an arrangement was reached by which empty stock cars entering all the principal railway centres in Canada are cleansed and disinfected under the supervision of inspectors specially appointed for this purpose.

On the arrangement being found to work satisfactorily, its provisions were, in order to make them effective, embodied in a ministerial order, which is now being duly enforced throughout the Dominion.

Special inspectors are also constantly engaged in the work of examining the various stockyards throughout the Dominion for the purpose of seeing that these are maintained in a clean, comfortable and sanitary condition.

Apart from the additional safety from disease infection due to the operations above mentioned, shippers of live stock express themselves as being highly pleased with the new conditions, while last, but not least, the suffering and discomfort of the animals themselves have been very materially lessened.

The work of meat inspection, which has now been in operation for nearly three years, is constantly becoming more effective as well as more popular. Confined as the service is, however, to establishments engaged in export or interprovincial trade, it is not sufficiently far-reaching in its effects on the general meat supply of the Canadian people.

There is a growing sentiment, largely due to the thoroughness of the work performed by my officers, in favour of the establishment, under provincial legislation, of municipal abattoirs, in which the meats entering into domestic trade could be subjected to a proper scrutiny before being placed on the market. The general feeling is that if it is necessary to condemn, as my officers daily do, considerable quantities of the meats derived from the admittedly high-class animals entering our large export establishments, the conditions existing in the ordinary private slaughter house are well worth looking into.

The owners of inspected houses, while loyally supporting the department, realize, and do not hesitate to say, that, under present arrangements, they are being subjected to the unfair competition of diseased and unsound meats sold by dealers who are entirely free from official supervision and whose condemnations, being made by themselves, are, very naturally, few and far between.

It is to be hoped that, in the near future, our provincial and municipal authorities will become alive to the necessity of taking action in the direction of providing such a system of domestic meat inspection as will place the products of the ordinary retail butcher on a parity with those of the packer as regards quality, soundness, and above all, freedom from disease.

Since the date of my last report there has been, I am glad to say, speaking generally, a very marked improvement in the conditions under which the packing of fruits and vegetables is carried on. This is largely due to the supervision of the special officers of my department who are entrusted with the inspection of the estab-

lishments engaged in this industry. While, of course, the methods followed in some houses left little to be desired, the converse was true of many others.

It has not, so far, been found necessary in any instance to take legal proceedings, the packers, almost without exception, having shown themselves ready and willing to meet the requirements of the law as soon as these were explained to them. The results of the new legislation embodied in the Meat and Canned Foods Act are, as a whole, exceedingly gratifying, and indicate that the various lines of industry affected will eventually benefit largely by the improvement in both method and material consequent on the inauguration of a policy of official supervision.

ARCHIVES.

During the past year the Archives Branch has acquired many valuable collections of original papers, and the work of classifying and arranging these documents is progressing satisfactorily.

Details of the work carried on by the branch is to be found in the appendix to this volume (see Appendix No. 22).

III.—PATENTS OF INVENTION.

The following tables show the transactions of the Patent Office, Department of Agriculture, from April 1, 1909, to March 31, 1910:—

Applications for Patents.	Patents and Certificates Granted.			Caveats.	Assignment of Patents.	Notices under Section 8.
	Patents.	Certificates.	Total.			
7,789	7,223	1,010	8,233	448	3,147	790

Detailed Statement, Patent Office Fees.

Month.	Notices.	Patents.	Assignments.	Certified Copies.	Caveats.	Sundries.	Subscriptions.	Total.
1909.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April	116 00	14,930 05	589 50	205 65	225 00	22 16	50 30	16,138 66
May	101 00	17,063 25	690 85	226 25	205 00	34 00	128 65	18,449 00
June	132 00	12,548 50	634 25	275 89	164 00	20 60	71 45	13,846 69
July	169 25	12,885 65	643 00	125 40	162 00	9 25	27 40	14,021 95
August	153 00	14,169 10	556 00	233 40	204 00	100 00	18 40	15,433 90
September	122 00	14,015 20	508 00	160 85	120 00	10 00	9 10	14,945 15
October	126 50	15,645 94	532 85	219 45	168 85	7 00	12 60	16,713 19
November	98 25	14,492 10	746 00	171 70	137 00	19 70	19 80	15,684 55
December	135 75	14,989 50	691 00	160 80	159 00	14 50	36 40	16,186 95
1910.								
January	141 00	15,883 65	667 40	236 15	120 65	16 75	31 80	17,187 40
February	124 85	16,107 90	789 15	212 00	245 00	2 75	44 25	17,525 90
March	164 00	17,143 15	601 25	275 90	222 00	14 25	19 65	18,438 20
	1,583 60	179,873 99	7,649 25	2,503 44	2,220 50	270 96	469 80	194,571 54

The Canadian patentees were distributed among the provinces of the Dominion as follows:—

Ontario.	Quebec.	Manitoba.	British Columbia.	Nova Scotia.	New Brunswick.	Saskatchewan.	Alberta.	Prince Edward Island.	Yukon.
610	267	88	90	29	30	40	39	2	3

Patents issued to residents of Canada, with the ratio of population to each patent granted:—

Provinces.	Patents.	One to every.
British Columbia	90	2,561
Ontario	610	3,627
Manitoba	88	4,155
Alberta	39	4,754
Saskatchewan	40	6,444
Quebec	267	6,451
Yukon	3	9,073
New Brunswick	30	11,179
Nova Scotia	29	15,983
Prince Edward Island	2	50,711

Patents issued to citizens of foreign countries:—

Countries.	Patents.	Countries.	Patents.
United States of America	5,021	Hungary	7
Great Britain	392	Spain	1
Germany	241	Egypt	1
Australia	60	Southern Rhodesia	1
France	75	Russia	14
New Zealand	37	Norway	18
Sweden	39	Newfoundland	2
Belgium	20	Japan	2
Austria	23	Mexico	11
Italy	8	Argentine	5
Switzerland	12	Russian Poland	2
Denmark	8	Holland	7
Transvaal	12	Cuba	1

Statement of the number of patents issued under the Act, on which the fees are paid for periods of six, twelve or eighteen years, at the option of the patentee; and of patents on which the certificates of payments of fees were attached after the issue of patents originally granted for periods of six and twelve years.

Period for which Fees were paid on First Issue.			Patents on which Certificates were attached after issue.		Reissues.	
6 years.	12 years.	18 years.	6 years.	12 years.	6 years.	18 years.
7,197	5	14	955	55	6	1

The total revenue of the Patent Office for the year ending March 31, 1910, was $194,571.54.

The number of new applications for patents presented during the year was 7,789, an increase over the preceding year of 550.

The total number of reports issued by the examiners during the year was 10,909, and seven patents were surrendered and reissued.

Out of the total number of patents granted by this office during the year, there were 5,021 issued to inventors, or assignees, resident in the United States, being 70 per cent of the whole issue.

This branch of my department continues to receive the official reports of patents from Great Britain, Australia, United States, Mexico and Japan, in addition to other periodicals of a scientific nature, in exchange for the Canadian Patent Office Record.

There were 1,366 patents brought under the conditions of the Compulsory License clause, section 44, of the Patent Act.

The number of notices under section 8 was 790.

The present fiscal year shows a very large increase in the business of the office and in its revenue. The total amount of fees received was $194,571.54, being the largest receipts for the same period of time in the history of this branch of my department, the increase over the preceding year amounting to $17,879.49.

IV.—COPYRIGHTS, TRADE MARKS, INDUSTRIAL DESIGNS AND TIMBER MARKS.

Statement of fees received by the Copyright and Trade Mark Branch from April 1, 1909, to March 31, 1910.

Months.	Trade Marks.	Copyrights.	Designs.	Timber Marks.	Assignments.	Copies.	Total
1909.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April	2,635 25	131 00	70 00	8 00	36 75	16 00	2,897 00
May	2,485 05	120 88	70 00	6 00	49 00	22 75	2,753 68
June	2,203 15	105 40	50 00	30 00	47 75	37 25	2,473 55
July	3,951 15	154 00	43 50	18 00	44 40	21 00	4,235 05
August	2 086 15	131 65	85 15	10 00	11 50	11 25	2,335 70
September	2,675 55	131 50	40 00	8 00	42 00	7 00	2,901 05
October	3,078 75	162 25	70 00	6 00	22 00	12 50	3,351 50
November	2,745 40	148 75	35 00	30 00	16 00	22 50	2,997 65
December	3,136 45	225 00	95 00	21 00	21 00	31 00	3,529 45
1910.							
January	2,780 45	129 50	40 25	58 00	24 00	5 00	3,037 20
February	3,395 00	134 15	64 25	12 00	26 00	16 50	3,647 90
March	3,555 65	134 00	100 00	28 50	23 00	67 25	3,908 40
Totals	34,728 00	1,708 08	763 15	235 50	363 40	273 00	38,071 13

The particulars of the registrations made by the Copyright and Trade Mark Branch of the Department of Agriculture during the year ended March 31, 1910, are as follows:—

I. Copyrights—		
Full copyrights without certificates	1,243	
Full copyrights with certificates	171	
Temporary copyrights without certificates	16	
Temporary copyrights with certificates	4	
Interim copyrights without certificates	95	
Interim copyrights with certificates	5	
Renewals of copyrights	1	
		1,535
II. Trade Marks		1,059
Renewals of specific trade marks		13
III. Industrial Designs		143
Renewals		2
IV. Timber Marks		108
V. Assignments		174
Total registrations		3,034

The following table shows a comparative statement of the business of this branch from 1897 to 1909, inclusive:—

Year.	Letters Received.	Letters Sent.	Copyrights Received.	Certificates of Copyrights.	Trade Marks Registered.	Industrial Designs Registered.	Timber Marks Registered.	Assignments Registered.	Fees Received.
									$ cts.
1897	2,606	3,548	756	273	446	75	13	94	14,101 93
1898	2,576	3,453	734	275	423	136	15	114	13,535 17
1899	2,487	2,910	702	237	430	112	5	117	14,161 28
1900	2,679	3,213	893	247	447	126	22	136	14,782 53
1901	2,605	3,211	888	249	521	146	24	183	16,823 26
1902	2,687	3,257	900	196	528	164	26	222	17,703 09
1903	2,687	3,211	900	176	557	88	23	272	18,086 25
1904	2,858	3,293	1,106	228	621	107	25	118	20,647 30
1905	3,367	3,902	1,130	189	661	139	22	154	23,706 77
1906	5,340	5,193	1,228	169	1,119	125	47	282	33,107 13
1907	4,475	4,353	1,240	175	848	182	33	136	30,073 29
1908	6,647	4,980	1,416	170	892	162	44	343	37,514 00
1909	6,320	5,750	1,535	171	1,059	143	108	174	38,071 13

V.—PUBLIC HEALTH AND QUARANTINE.

A report of this division of my department must differ from that on other divisions, inasmuch as the best results of public health measures—like all other preventive work—are negative and not positive in their nature. The less there is to say of the year's work, the more thoroughly satisfactory that year's work has been. The work even when fraught with results most protective of, and beneficial to, the country, is but too apt to pass unrecognized. As long as the country is free from exotic infectious diseases, and a man and his household are not directly threatened by them, who stops to think or to ask why this is so, or to appreciate the preventive work I am having ceaselessly carried out, day and night, along the coast and frontier, or the perfection of the scientific machinery and appliances that render this work so efficacious. Unceasing vigilance is the price of safety.

The usual threatenings of infectious diseases from the Orient, from Europe and other parts of this continent, have continued since my last report.

Bubonic Plague has occurred during the year in India, Mauritius, Hong Kong, China, Japan, Formosa, Singapore, Turkey, Persia, Egypt, British East Africa, German East Africa, Zanzibar, the Azores, Australia, South America, Trinidad, United States of America, Hawaii and Russia.

In Hong Kong, plague has been less than in former years. In India there has also been a diminution, only 168,403 cases having been reported in 1909, against 730,729 for the previous fiscal year, and 1,022,000 for the fiscal year 1907.

In the United States one death occurred from this disease in California in September last. Plague continues present amongst rats and ground squirrels in that state. The infection of the ground squirrels is said to cover an area of about 5,000 square miles. The last plague infected rodents were found, one each on the 5th, 9th and 16th, and two on the 17th of this month, and one on the 25th inst.

In Seattle, Washington, which is in such close communication with Canada, another plague infected rat was found on the 8th of last month.

In consequence of the above facts, vessels plying between Seattle and Canada are still required to continue the precautions to prevent rats coming on board at Seattle or leaving in British Columbia ports. The vessels are breasted away from the piers, the mooring ropes are guarded with discs and the gangways limited and guarded.

Regular monthly supplies of anti-plague serum are received by me from the Lister Institute in London, England, ready to be sent to any point in Canada upon notice given.

Asiatic Cholera has occurred during the year in Belgium, China, Germany, India, Japan, Java, Korea, Manchuria, Netherlands, Persia, Philippine Islands, Russia, Siam, Siberia, Straits Settlements, Sumatra, Sweden and Turkey.

Circular letters of warning and instruction were issued from time to time to my officers, and strict measures, ordinary and special, have been applied by me for the sanitary protection of the country.

At the date of my last annual report vessels from Newfoundland were being inspected at my Atlantic stations in view of the prevalence of Smallpox on the island. The outbreak having died down, I was able to again except Newfoundland from this special inspection on April 20 last.

On February 23, I found it necessary to order special quarantine inspection of vessels from the mainland arriving at Charlottetown and Georgetown, Prince Edward Island, on account of Smallpox in Nova Scotia.

On account of Smallpox in Minnesota, I had to institute a special quarantine inspection of those entering Canada at Fort Frances and Rainy River, Ontario.

And from the reported presence of this disease in Montana and Northern Dakota, I have now under consideration the expediency of ordering special inspection of the many land-seekers and settlers who are flocking into Canada by way of North Portal, Saskatchewan.

During the year three new cases of Leprosy developed in Canada, and were dealt with by me under the Act respecting Leprosy.

I have, during the year, appointed Dr. J. A. Langis, of Petit Rocher, N.B., as Medical Officer of the Tracadie Leper Lazaretto, in place of Dr. Smith, deceased; and Dr. A. E. Clendenan, of Edmonton, Alberta, as Inspector of the Western Division, under the Public Works Health Act, in place of Dr. Chamberlain, resigned.

At my Quarantine Station of Gross Isle, Quebec, in the River St. Lawrence, a monument to the victims of the famine and pestilence (typhus fever) of 1847 has been this year completed on the most elevated point of the island, in full view of passing vessels. It has been erected and was last summer unveiled under the auspices of the society called the 'Ancient Order of Hibernians.' Just at the foot of the hill on which it stands is the cemetery, marked by a small monument bearing the inscription:—

'In this secluded spot lie the mortal remains of 5,424 persons who, flying from famine and pestilence in Ireland in the year 1847, found in America but a grave.'

Feeling that we cannot afford to lag behind in the world-wide battle now being waged by all civilized peoples against infectious disease, I have arranged that Canada should accede to the Agreement of Rome of December 9, 1907, for the creation of an International Office of Public Health at Paris for the exchange and dissemination of information as to the existence and progress of infectious diseases in all countries, and this country is now in relation therewith.

VI.—CENSUS AND STATISTICS.

The Canada Year Book, 1908, being the fourth volume of the second series, was published early in the fiscal year. Several new tables were added, and the section relating to minerals was expanded to include statistics of production for a series of years. The preparation of the Year Book for 1909 was completed, and the manuscript delivered to the Printing Bureau before the close of the year. In order to keep this work within reasonable limits of size and within its appropriation of expenditure, a number of tables heretofore given, occupying 128 pages, have been omitted. New

tables relating chiefly to manufactures and railways, occupying 25 pages, have been added; so that the net reduction of space is 103 pages.

The report on the Criminal Statistics of 1908 has been issued, and the report for 1909 is now being prepared.

The system of monthly reports on the condition of crops and live stock of Canada, commenced in 1908, was continued during 1909, with improvements resulting from the first year's experience. The spring of 1909 throughout Canada was late, wet and cold, and seeding operations were consequently delayed. The total area under wheat was, however, estimated by the Census and Statistics Office in June as 7,750,000 acres, an increase of 1,140,000 acres over 1908; and on the whole the season proved very favourable. A bountiful harvest was reaped, and the yields per acre for most crops were superior to those of 1908, and were generally above average. Preliminary estimates of the yields of the principal field crops were issued for August 31 (cereals, hay and clover), and for October 31 (root and fodder crops).

The final estimates of the production and value of the field crops of 1909 were issued for December 15, and the following table gives the details of area, yield and value for each crop for the year 1909, together with the corresponding figures for 1908:—

Crops.		Area.	Yield per Acre.	Total Yield.	Weight per measured Bushel.	Average Price.	Total Value.
		Acres.	Bush.	Bush.	Lbs.	Per bush.	$
Wheat	1909	7,750,400	21·51	166,744,000	59·83	0·848	141,320,000
	1908	6,610,300	17·00	112,434,000	59·10	0·811	91,228,000
Oats	1909	9,302,600	38·00	353,466,000	35·65	0·346	122,390,000
	1908	7,941,100	31·64	250,377,000	35·47	0·390	96,489,000
Barley	1909	1,864,900	29·71	55,398,000	47·09	0·459	25,434,000
	1908	1,745,700	26·79	6,762,000	42·02	0·460	21,353,000
Rye	1909	91,300	18·78	1,715,000	54·53	0·731	1,254,000
	1908	100,350	17·05	1,711,000	55·58	0·740	1,262·000
Peas	1909	393,300	20·71	8,145,000	60·92	0·887	7,222,000
	1908	412,900	17·09	7,060,000	57·25	0·850	5,970,000
Buckwheat	1909	282,440	7·64	7,806,000	47·73	0·583	4,554,000
	1908	291,300	24·55	7,153,000	47·49	0·590	4,215,000
Mixed grains	1909	582,100	33·31	19,391,000	44·39	0·563	10,916,000
	1908	581,900	32·73	19,049,000	45·25	0·530	10,140,000
Flax	1909	108,471	15·98	2,213,000	55·56	1·248	2,761,000
	1908	139,300	10·76	1,499,000	54·23	0·970	1,457,000
Beans	1909	55,970	23·67	1,324,600	60·23	1·420	1,881,000
	1908	60,100	27·00	1,245,000	59·18	1·590	1,988,000
Corn for husking	1909	352,570	54·62	19,258,000	57·80	0·663	12,760,000
	1908	366,200	62·45	22,872,000	59·59	0·520	11,837,000
Potatoes	1909	513,508	192·96	99,087,200	.....	0·367	36,099,000
	1908	503,600	132·00	73,790,000	.....	0·470	34,819,000
Turnips, &c.	1909	248,047	434·29	107,724,600	.....	0·169	18,197,500
	1908	271,443	373·00	101,248,000	.....	0·170	17,532,000
			Tons.	Tons.		Per Ton.	
Hay	1909	8,210,300	1·44	11,877,100	.....	11·140	132,287,700
	1908	8,210,900	1·39	11,450,000	.....	9·960	121,884,000
Fodder corn	1909	269,650	10·30	2,779,500	.....	5·430	15,115,500
	1908	259,770	11·27	2,928,000	.....	4·030	11,782,000
Sugar beets	1909	10,000	8·60	86,000	.....	5·810	500,000
	1908	10,800	10·07	109,000	.....	5·310	578,000

Data as to the numbers of live stock in Canada were collected from correspondents for June 15, and the following table gives the estimated numbers of horses, cattle, sheep and swine for each of the three years 1907, 1908 and 1909:—

Live Stock.	1907.	1908.	1909.
	No.	No.	No.
Horses	1,923,090	2,118,165	2,132,489
Milch cows	2,737,462	2,917,746	2,849,306
Other horned cattle	4,394,354	4,629,806	4,384,779
Sheep	2 783 219	2,801,404	2,705,390
Swine	3,445,282	3,369,858	2,922,509

Estimates of the wages of farm help, of stocks of grain in farmers' hands and of areas ploughed and seeded were also compiled from the returns of correspondents, carefully compared with other available data, and the results published.

Summaries of the monthly reports have been communicated to the press as soon as ready, and the complete results have been published in the Census and Statistics Monthly, together with notes on the work of the various branches of the Department of Agriculture, crop reports from other countries, prices of agricultural produce in British markets, and other information of agricultural interest.

The Chief Officer attended, as one of the two official representatives of Canada, the meetings of the General Assembly of the International Institute of Agriculture, which were held in Rome from December 12-18, and he presented to the Assembly a communication describing the scheme adopted for reporting on the field crops and live stock of Canada.

Bulletins X and XI of the Census and Statistics Office have been prepared during the year from data of the Census of 1901, and are now in the press. Bulletin X, Real Estate owned in Canada, is a report on the area of real estate owned in Canada, including lands, dwelling houses, stores, warehouses, barns, stables and silos; and Bulletin XI, Occupations of the People, classifies the occupations of the people of Canada by ages under 16 years and 16 years and over. A bulletin giving the religions of the people by birthplace and origin is in course of preparation.

Progress has been made during the year with the preparation and printing of the Schedules for the Fifth Census of the Dominion of Canada, to be taken in 1911.

The whole respectfully submitted.

SYDNEY A. FISHER,
Minister of Agriculture.

APPENDICES.

PUBLIC HEALTH.

APPENDIX No. 1.

REPORT OF THE DIRECTOR-GENERAL OF PUBLIC HEALTH.

(F. Montizambert, I.S.O., M.D. Edin., F.R.C.S.E., D.C.L.)

March 31, 1910.

Sir,—I have the honour to submit this my report as Director-General of Public Health for the year ending this day.

The continued threatenings of infectious diseases from abroad have called for and been met by unceasing vigilance along the coasts and frontier.

Bubonic plague, Asiatic cholera and smallpox have been the gravest in their menace to this country. The strict measures, ordinary and special, approved by you for the sanitary protection of the country have again prevented the inroads of exotic disease.

Bubonic Plague.—This disease has not been prevalent to any great extent on this continent during the last year. The last recorded case of it sickened two miles south-west of Sunol, in Alameda county, California, on September 26 last. The presence and spread of the disease amongst rats and ground squirrels steadily continues, and marks an ever-present threatening of fresh outbreaks amongst the human race. In Alameda county, California, seventy-five ground squirrels and one wood rat have been found infected; the last plague-infected rodents found being on the 5th, 9th, 16th, and two on the 17th of this month.

Plague-infected squirrels have now been found in Contra Costa, Alameda, Santa Clara, San Benito, Santa Cruz, San Joaquin, Stanislaus, Merced and Santa Barbara counties—an area of about five thousand square miles.

In Oakland township, California, four infected ground squirrels were found on the 8th of this month, and one last week, on the 25th instant.

In Seattle, Wash., the last plague-infected rat was found on the 8th of last month.

The danger arising from the presence of Bubonic plague amongst the ground squirrels threatens in several ways. In the first place directly. The last case in California was in a boy who is said to have caught and played with ground squirrels; and secondly indirectly by communicating their infected fleas to rats or to cows who may lie down on or near their homes, and thence bring them to their milkers, &c. Some 238 infected ground squirrels have already been detected amongst those examined. Ranchers and others who have observed the squirrels closely state that they have been dying in great numbers.

Plague prevention work continues to be carried on earnestly by officers of the Public Health and Marine Hospital Service in California, and many facts of interest are constantly being discovered. In a recent report to the Surgeon General, Passed Asst. Surgeon G. W. McCoy states that an infected ground squirrel has been discovered in San Luis Obispo county, California, and goes on to say that about 2,000 squirrels

from this county had been examined before an infected one was found, a sufficiently striking illustration as to why the determination of the extent of the epizootic is a matter requiring much time and work.

The most important and instructive part of the report is that which discusses the possibility of cattle as intermediary hosts for squirrel fleas, Assistant Surgeon Simpson, after referring to the comparatively easy explanation of the mode of plague transmission from rat to man by the agency of infected fleas, points out the difficulty of tracing an intermediary host in the possible transmission of plague from squirrel to man. Of course, there is no difficulty in understanding how fleas pass from squirrel to squirrel, owing to their close association in their villages, and it has been clearly demonstrated that infected fleas can transmit plague from squirrel to squirrel; but the stumbling block is to be able to account for the method of conveyance and the opportunity for the passage of infected fleas from squirrel to man. The squirrel may obtain, in fact does obtain, a part of his food supply from man, and often lives in a territory traversed by man. In a few words, although, as a rule, the squirrel does not come into such close contact with man as the rat, plague in man has occurred with sufficient frequency where this close association could be shown to warrant the statement that the infection came from the squirrel. But two cases of plague infection of man have occurred, where there was no exposure to rat infection, and where the route of infection could not be traced to the squirrel. Simpson offers as a possible solution that cattle on the range may be a means of the conveyance of fleas, and in support of this theory draws attention to the following facts: Fleas abound in and about squirrel villages, the number present depending on the season of the year, and cattle as they range over this territory stray through and lie down to rest in and around these villages. They might thus very readily acquire fleas, and since it has been established that fleas quickly desert an animal after death and seek another host, they would the more readily acquire fleas in those villages containing infected squirrels. Where fed daily, at some common point, as in the case with dairy cattle, they might readily convey fleas from the homes of the squirrel to the homes of man, and plague occurring in such circumstances, where this intermediate host was not recognized, would be satisfactorily traced to its source.

In commenting upon this report the *Medical Journal* adds:—

This is an ingenious and a plausible theory, although at first sight it may appear far fetched. It is known that squirrels are prone to plague infection, and two cases of plague in man have occurred in which the link in the chain of infection was not traced, that is to say no squirrels were known to have been near enough to the sufferers to have communicated the disease directly by means of infected fleas. It is, therefore, possible that cattle were the intermediary carriers, although much more will have to be learned on the subject before this explanation can be unreservedly accepted.

There is reason to believe that the booby owl, which is a constant companion of the ground-squirrel, occupying the same burrows with him, may play an important role in the dissemination of the epizootic. It is thought that this bird, flying from burrow to burrow, may carry infected fleas for long distances. If this be found true, the problem of the eradication of the epizootic will be greatly complicated thereby.

In Seattle, Wash., a rat picked up on February 8, 1910, by a city trapper was verified and reported as plague infected on February 19.

This rat was found in the back yard of a building, the ground floor of which was occupied by two restaurants, a fruit store, saloon, and drug store. The yard also adjoins a building on the other street occupied by a restaurant. These buildings are of wooden construction resting on piles. The yard was occupied by a wooden platform and woodpile, &c., and the ground was burrowed by rats. The platform and woodpile were moved and the ground covered with gravel by order of the municipal depart-

ment of health and the floors of the buildings were also ordered concreted. Special attention has been given to the sanitary conditions of that and surrounding blocks.

One San Francisco example will illuminate the subject of the relation between the rat and plague in man. A thrifty German family, consisting of a man and wife, three children, and a grandmother, apparently well housed and domestically neat and clean, was wiped out by plague, with the single exception of an eighteen months' old boy. There was no known focus of infection near them, but when the wooden flooring of the house and back yard were torn up, the carcasses of nineteen plague-infected rats were found.

In the war against the rat the plague eradicative measures may be briefly summarized as follows:—

A simultaneous attack upon the habitation and food supply of the rat.

The destruction of rat burrows and nesting places.

The separation of the rat from his food supply by concreting and screening such places as stables, warehouses, markets, restaurants, &c.

The prevention of the entry of the rat into human habitations by the use of concrete or other impervious material on the ground area or by elevating the building so as to allow free access to the natural enemies of the rat beneath the same.

Disinfection of rat burrows by the use of strong antiseptic solutions and chloride of lime in places likely to furnish fleas.

Disinfection of buildings in which either human or rodent cases have occurred. This latter measure is not considered as important as rat extermination.

Vessels plying between Seattle and Canada are still required to take precautions to prevent rats coming on board in Seattle or leaving vessels in British Columbia ports. The vessels are breasted away from the piers, the mooring ropes are guarded by discs, gangways limited and guarded, &c.

During the year the Bubonic plague has appeared in India, Mauritius, Hong-Kong, China, Japan, Formosa, Singapore, Turkey, Persia, Egypt, British East Africa, German East Africa, Zanzibar, The Azores, Australia, South America, Trinidad, United States of America, Hawaii and Russia.

In India plague has markedly diminished. For the fiscal year 1909 there were but 168,403 cases, as against 730,729 for the previous fiscal year, and more than 1,022,000 for the fiscal year 1907.

Asiatic Cholera has occurred during the year in Belgium, China, Germany, India, Japan, Java, Korea, Manchuria, Netherlands, Persia, Philippine Islands, Russia, Siam, Siberia, Straits Settlements, Sumatra, Sweden, and Turkey.

In Russia alone, between May 23 and October 10, more than 15,000 cases were reported, with 6,000 deaths.

The German government has instituted stringent measures requiring inspection of corpses by physicians, warning against the use of river water, supervising marine and river traffics (as without doubt the invasion of cholera from Russia occurs by water), installing steam disinfection apparatus at all quarantine stations and at the two cholera hospitals, and enforcing medical examination and baths for emigrants and immigrants and disinfection of their linen and clothing. The Russian raftsmen are returned to the border in closed cars.

Smallpox.—This disease has had a world-wide occurrence this year.

During the past ten years smallpox has been unusually prevalent in the United States. The number of cases of smallpox reported to the Surgeon-General of the Public Health and Marine Hospital Service during the calendar year 1908, by the local state health officers of the various states, was 35,174. In Minnesota, 7,031 cases occurred, giving a case rate per 1,000,000 of population of 3,397. In Kansas there were 3,458 cases, with a case rate per 1,000,000 population of 2,096, and Montana had

732 cases and a case rate per 1,000,000 population of 2,339. However, these records are by no means accurate, owing to the difficulty of obtaining precise information. Further and more satisfactory co-operation is required between state health authorities and the Public Health and Marine-Hospital Service. In a paper on this subject read by John W. Trask of the United States Public Health and Marine-Hospital Service, at the meeting of the American Public Health Association in October, 1909 (*American Journal of Public Hygiene*, February, 1910), the author expressed his belief that in 1908 there were probably more than 70,000 cases of smallpox. Now, in a highly civilized and enlightened country it is something of a public scandal that there should have been in the neighbourhood of 70,000 cases of smallpox in one year. The situation, too, is aggravated when it is known that the disease can be virtually eradicated if proper measures are practiced. Of course, vaccination will, in time, and in not a long period either, stamp out smallpox if the method is throughly enforced. This has been proved. Smallpox was eradicated from the German army by systematic vaccination. It may be said, and with a considerable degree of truth, that means possible in an army are not available in an ordinry community. But as Trask points out, smallpox has been eradicated to all intents and purpose, from some of our states.

Perhaps the most convincing argument in recent times in favour of vaccination has been supplied in the Philippines. The Director of Health of the Philippines, in his annual report for the fiscal year 1907, says: 'During the year there has been unquestionably less smallpox in the Philippines than has been the case for a great many years previous. In the provinces of Cavité, Balangas, Cebu, Bataan, La Union, Rizal, and La Laguna, where heretofore there have been more than 6,000 deaths annually from this cause alone, it is satisfactory to report that since the completion of the vaccination in the aforesaid provinces, more than a year ago, not a single death from smallpox has been reported.' En passant, reference may be made to the prevalence of smallpox in certain parts of the province of Quebec. Dr. E. Pelletier, Secretary of the Quebec Provincial Board of Health, in the annual report of the board just issued draws attention to this prevalence and also to the fact that owing to the control of vaccination being in the hands of the municipalities, vaccination in Quebec is really optional and enforcement is practically a dead letter. There is no need to multiply proofs as to the efficacy of vaccination, the question is how to render it general throughout the country and thus to stay the spread of smallpox. Trask rightly shows that in order to eradicate a disease the first essential is an accurate knowledge of its distribution and prevalence; in other words, it is necessary to be supplied with accurate morbidity statistics.—*Medical Record.*

Yellow Fever.—For many years Rio de Janeiro was a close rival of Havana for the dubious honour of being the chief yellow fever centre in the world, and for the last third of the nineteenth century it was easily in the lead, notwithstanding the armies of nonimmunes that Spain was constantly sending to Havana. In 1901, the year that Havana, for the first time in one hundred and forty years, had several months with no yellow fever mortality, Rio de Janeiro recorded 2,299 deaths and in the two following years had 1,568 deaths. Then the city awoke to its disgrace and the Public Health Service instituted a campaign under the able direction of Carneiro de Mendonça, who died while the struggle was most severe, but not until he had organized the Bureau of Yellow Fever Prophylaxis and had inspired his assistants with an enthusiasm which carried them on to victory after his death. A report from the American Consul-General at Rio de Janeiro contains an authoritative and detailed statement of the means by which the sanitary regeneration of the city was effected. This is in the nature of a paper read by Dr. Oswaldo Cruz, chief of the Public Health Service of Brazil, before the Latin-American Medical Congress held in Rio de Janeiro, August 1 to 10.

The initiation of the campaign was beset with many difficulties, for although the health officials had the benefit of Gorgas's experience in Havana, the physical conditions in the two cities were very different. Rio de Janeiro is a city of nearly a million inhabitants, with 82,396 houses spread over an area of 430 square miles and of very irregular topography, the altitude varying from sea level to 1,600 feet. The workers had, of course, also to contend with the ignorant opposition of many of the inhabitants and were backed only by the civil authority which is never so implicitly obeyed as is the military. The campaign was begun the latter part of April, 1903, but it was not until January of the following year that a sufficient appropriation for the service was made by Congress. The army of yellow fever fighters consisted of one medical inspector, ten sanitary inspectors (physicians), one administrator, one customs inspector, one accountant, seventy medical student assistants, nine sub-chiefs, two hundred overseers, thirty-six guards, and one thousand labourers. With this force every house was visited, all water tanks and other places where mosquito larvæ might be found were inspected, the larvæ were destroyed, and further access of mosquitos was prevented. When a case of yellow fever was found the same routine was followed as that established in Havana, of screening the patient and destroying all mosquitos present in the house where he lived. All the persons in a district where yellow fever had occurred were kept under observation one month, during which time every inhabitant was inspected daily. In order to test the efficacy of the antimosquito measures employed, traps were set, from time to time, in the shape of uncovered vessels of water, which were examined at frequent intervals. In many cases no eggs or larvæ were found even after long exposure of the traps, proving the absence of mosquitos.

Owing to the difficulties mentioned, the results of this campaign were not immediately apparent, there being 289 deaths from yellow fever in 1905; but from that time there was a rapid fall, forty-two deaths occurring in 1906, thirty-nine in 1907, four in 1908, and none in 1909. The fever season in Rio de Janeiro corresponds, of course, to our winter, and as the four deaths in 1908 occurred early in the year it follows that there were none during the hot months of 1908-9, so that Cruz appears to be justified in his claim that yellow fever in Rio de Janeiro has been wiped out.

This experience of the Brazilian health officials corroborates what events in Havana and Panama have demonstrated, that it is possible to exterminate mosquitos in a city, or at least to keep them within what Gorgas regards as the safe limit of numbers. The occurrence of an epidemic of yellow fever in any city will therefore no longer be excusable on the ground of ignorance or of an unavoidable condition of unpreparedness. The authorities of a city who permitted combustibles to be stored in the open where a spark might start a devastating conflagration would be no more culpable than the health authorities who permitted the continuance of breeding places of the yellow fever mosquito, and the public will be not slow to place the blame where it belongs if any city is ever again visited by an epidemic of yellow fever.

In further corroboration of these experiences, I may cite the admirable work done by Dr. Alvah H. Doty, health officer of the port of New York and health commissioner. Staten island, with its salt marshes, was formerly infested with swarms of mosquitos. Dr. Doty for some years past has had carried out a systematic process of draining the marshes and waging war by the other recognized anti-mosquito measures. As a result, the pest is abated, much valuable arable land has been brought under cultivation, the price of property has markedly increased, visitors are flocking to its sea-side and other resorts, and the once dreaded mosquitos have been reduced from unbearable swarms to a negligible quantity.

Beri-beri.—The theory of the relationship between rice-eating peoples and Beriberi is very old. Yet that rice is the only and invariable cause seems to conflict with the history of certain outbreaks.

Dr. Ellis, medical superintendent of the Beri-beri hospital, Singapore, relates his experience in regard to the effect on patients of diets of cured and uncured rice, respectively, in addition to other foods. He says:—

'In the earlier experiments carried on throughout the years 1902 and 1903 some of the patients were given a diet with cured rice and some with uncured rice for varying periods, and from watching the results, I was inclined to think, for the first time, that there might be something in the theory, so persistently maintained by Dr. Braddon, that the consumption of stale uncured rice was in some manner the causative agent of the disease.

'In 1904 all patients were kept on cured rice until October 16 without a case of beri-beri occurring; upon this date a change was made to uncured rice, with the result that we had fifteen cases in December with one death.

'Throughout 1905 several changes were made from cured to uncured rice and back again. These experiments so increased my belief in the theory that in 1906 we ran the first eleven months of the year on cured rice and without a single case of beri-beri. This result decided me to make one last and systematic trial of the two varieties of rice, and I determined that for a year or longer all patients should be placed alternately four months on a diet containing cured rice and four months on uncured rice. Our full native diet consists of rice, 1½ pounds; meat, 4 ounces; fish, 4 ounces; vegetables, assorted, 6 ounces; salt, ½ ounce; onions, ½ ounce; garlic, ⅛ ounce; and lard, ½ ounce daily. This trial was carried out with the exception that the second and third spells of four months on uncured rice were cut short on account of the rapid manner in which patients from all parts of the asylum succumbed to beri-beri.

'I am happy to say that on cured rice we have had no recurrence of the disease for over a year. It is needless to say that a return will never be made to the uncured grain. A few new patients have been admitted with beri-beri, but all have made rapid recoveries.'

Certain facts of interest in the general management of beri-beri cases are added, one being that the return of the knee jerk in recovering cases may be delayed for years. The rice preferred by the author is that grown in Spain. It is soaked in water for forty-eight hours, the water being once changed, then placed in boilers and steamed (not under pressure) till the grains burst, generally a matter of from ten to twelve minutes. It is then sun-dried and afterwards goes through the mills, being husked in the ordinary way.

On the other hand in a communication to the United States Public Health and Marine-Hospital Service, Acting Assistant Surgeon Sams, at Charleston, reports, March 27:—

An outbreak of beri-beri has occurred among the coloured convicts in camp at Ten Mile hill, about 10 miles from Charleston, S.C. There have been similar cases noted twice during the last five years at this and a like camp situated about the same distance from Charleston, but separated from the Ten Mile hill stockade by the Ashley river.

Through the courtesy of the attending surgeon I was permitted to visit the stockade to-day, examine the patients, and learn the history of the majority of the cases.

The location of the stockade is on a dry, sandy elevation, well drained, and open to a plentiful supply of fresh air and sunshine. The water for drinking purposes and for bathing is a good potable water, the same as is piped to Charleston. Flush closets are used to avoid soil pollution. The sleeping quarters are in a building about 100 x 30 feet, with high ceiling, a number of ventilators and windows, and a heavy wooden floor, the sleeping bunks being elevated several feet from the ground, open on all sides except the back, which is against the side of the building. Heating is by means of wood-burning stoves. In my opinion the location is good, and accommodations are all that is to be desired in regard to space, ventilation, and dryness.

The guards, who are white, occupy a part of the same building, only a hallway dividing their sleeping quarters from those of the convicts, yet their health has remained good. The food given the convicts is stated to be good and sufficient in quantity and quality, the usual cereals, fresh vegetables, meat daily, salt and fresh on alternating days. The guards have practically the same rations.

NO HISTORY OF RICE AS FOOD.

At the meeting of the Far Eastern Tropical Medical Association in Manila last week, Dr. Henry Fraser, director of the Straits Settlements Institute of Medical Research, offered the theory that beri-beri is due to a lack of phosphorous in the food. The steam milling rice process, he said, is at fault, because the high polish which produces the best quality of white rice removes the phosphorous contained in the pericarp. He had found that the use of the cheaper grades of unpolished rice, or the mixing of white rice with the polishings, restores the phosphorous and eliminates beri-beri. Dr. Aron, of the Philippine Medical School, who had been working independently of Dr. Fraser and experimenting on animals and natives, announced that he had reached the same conclusion.

Leprosy.—At the Second International Congress on Leprosy, held at Bergen from August 16 to 19, the following resolutions were adopted:—

A.—1. The Second International Scientific Conference on Leprosy confirms in every respect the resolutions adopted by the First International Conference of Berlin, 1897. Leprosy is a disease which is contagious from person to person, whatever may be the method by which this contagion is effected. Every country, in whatever latitude it is situated, is within the range of possible infection by leprosy, and may, therefore, usefully undertake measures to protect itself. 2. In view of the success obtained in Germany, Iceland, Norway and Sweden, it is desirable that other countries should isolate lepers. 3. It is desirable that the children of lepers should be separated from their parents as soon as possible, and that they should remain under observation. 4. An examination should be made from time to time of those having lived with lepers by a doctor having special knowledge. It is desirable that lepers should not engage in certain trades or occupations. All leper vagabonds and beggars should be strictly isolated.

B.—5. All theories on etiology and the mode of propagation of leprosy should be carefully examined to ascertain if they accord with our knowledge of the nature and biology of the bacillus of leprosy. 6. The clinical study of leprosy induces the belief that it is not incurable. We do not at present possess a certain cure. It is desirable, therefore, to continue the search for a specific remedy with the greatest zeal.

From the reports of the official delegates and from data furnished by the Norwegian Government, the following figures show approximately the present distribution of cases of leprosy throughout the world: France 246; Iceland, 200; Germany, 28; Roumania, 208; Servia, 3; Bulgaria, 9; European Turkey, 550; Greece, 9; Crete, 600; Russia, 1,372; Italy, 123; Spain, 240; Palestine, 800; India, 97,340; Ceylon, 589; Indo-China, 10,500; Java, 15,000; Borneo, 68; Sumatra, 896; Japan, 40,000; Canada, 20; Cuba, 1,297; Jamaica, 115; United States of Columbia, 4,152; Argentine Republic, 12,000; Algeria (in 26 years), 109; United States of America: mainland of America, 146; Hawaiian Islands, 764; Porto Rico, 17; Guam, 19; Philippine Islands, 2,330; Canal zone, 7.

Professor Ehlers (Copenhagen) presented the preliminary report of the Danish-French Commission for the study of leprosy, the subject being the 'Transmission of leprosy by suctorial insects.' The commission employed fleas, lice, and mosquitos, allowing them to feed upon the blood of lepers by placing the insect directly over a leprous nodule, the latter being first punctured with a needle, and the lepra bacilli demonstrated in the blood flowing from the wound.

Their results showed:—

1. That if a leprous nodule is punctured, the blood that flows from it is often rich in bacilli, due to a mixture of lymph from the lymph spaces.

2. That the blood an insect draws into itself rarely contains any bacilli, and never many, the explanation being that the insect obtains pure blood, unmixed with lymph, and that the lepra bacillus is rarely found in the blood, except in those dying of leprosy; that is to say, in the last stages of the disease.

Doctor de Beurmann (Paris) discussed the following subjects: 'Point of entrance of the lepra bacillus,' 'The leprous chancre,' 'Leprous septicæmia,' and 'Extension of leprous infection from the original "chancre" of lepra.' He believes that the skin is the usual site of infection and that the nares is more rarely so; that when the bacilli gain entrance they remain dormant for a period of months, and then, under certain conditions with which we are unfamiliar, gain sufficient virulence to multiply and cause an inflammatory reaction in the surrounding tissues. This constitutes the initial lesion of the disease. Later it reaches the blood stream, and new nodules are established in distant portions of the body. He regards the invasion of the blood by these bacilli as a common occurrence.

If such are found to be the facts, the early excision of suspicious single nodules offers a hope of arresting the disease.

Professor During (Dresden) read a paper entitled, 'Is lepra hereditary?' He reported that he had observed that the children of lepers are often physical weaklings and more susceptible to many diseases, but especially tubercle. On the other hand, he believed there was no evidence that they are hypersusceptible to leprosy, still less was there evidence of intrauterine infection, although on theoretical grounds it might be expected to occur.

The British and certain colonial delegates passed additional resolutions which have been printed as a part of the report of the British delegates.

These resolutions are as follows:—

We, the undersigned delegates from the British and certain colonial governments unanimously approve the resolutions adopted by the Second International Scientific Conference on Leprosy, held at Bergen, August 16 to 19, 1909. At a special meeting held by us on August 20 we agreed to the following additional resolutions:—

1. Leprosy is spread by direct and indirect contagion from persons suffering from the disease. The possibility that indirect contagion may be effected by fleas, bugs, lice, the itch, parasites, &c., has to be borne in mind. Leprosy is most prevalent under conditions of personal and domestic uncleanliness and overcrowding, especially where there is close and protracted association between the leprous and nonleprous.

2. Leprosy is not due to the eating of any particular food, such as fish.

3. There is no evidence that leprosy is hereditary; the occurrence of several cases in a single family is due to contagion.

4. In leprosy an interval of years may elapse between infection and the first recognized appearance of disease. It is a disease of long duration, though some of its symptoms may be quiescent for a considerable period and then recur.

5. The danger of infection from leprous persons is greater when there is discharge from mucous membranes or from ulcerated surfaces.

6. Compulsory notification of every case of leprosy should be enforced

7. The most important administrative measure is to separate the leprous from the nonleprous by segregation in settlements or asylums.

8. In settlements home life may be permitted under regulation by the responsible authorities.

9. The preceding recommendations, if carried out, will provide the most efficient means of mitigating the leper's suffering and of assisting in his recovery, and at the same time will produce a reduction and ultimate extinction of the disease.

These resolutions were signed by the delegates of Great Britain, Australia, Cape of Good Hope and Natal, Transvaal and Orange River, Ceylon, British Guiana and the Bahamas, and Fiji.

Sticker is supposed to have noted the theory that the nasal septum may be the seat of the initial lesion in leprosy, but George Pernet of London writes to the *Lancet* to say that the belief that leprosy began in the nose is of very ancient origin. In a general review of leprosy contributed by him to the *Quarterly Review*, April, 1903, he drew attention to the fact that Pliny mentioned the disease as commencing in the nose. Brinckerhoff quite rightly investigated only incipient cases. The majority of investigators have based their conclusions with respect to the above theory upon the study of relatively advanced cases. No more favourable field for such an investigation could have been selected than Hawaii. It was estimated by the investigators that six of every one thousand of the natives at large were lepers, and that therefore one might expect to find a leper for every 165 Hawaiians examined. It was felt that from statistical data one might reasonably anticipate finding a moderate number of incipient cases of leprosy by a thorough examination of a number of Hawaiians, and that if the nose were the site of a diagnosable initial lesion, such as is seen in later stages of the disease, it should be possible to discover cases of leprosy in individuals who were unaware of the infection.

Brinckerhoff and Moore in making their examinations attempted to answer the following questions: (1) Will the systematic examination of the nasal septum and the nasal secretions reveal cases of leprosy which would pass undetected by other methods of examination? (2) When an early case of leprosy is under observation, can it be said that the case could have been detected by the examination of the nasal septum secretions alone? The material on which the paper of Brinckerhoff and Moore was based consisted in the findings in the examination of the nasal septa and the nasal secretions of inmates of seven public institutions in Hawaii. In addition to these, patients were examined who presented themselves for treatment at the Free Dispensary and at the Marine-Hospital out-patient clinic in Honolulu. Further, every opportunity was taken to examine early cases of the disease to see if there were evidences of a primary nasal lesion on the nasal septum. Four hundred and sixty-seven Hawaiians were examined and the following conclusions were reached: (1) The routine examination of the nasal septum and the nasal secretions of individuals of a race with a high incidence of leprous infection did not reveal as many cases of leprosy as would be expected from statistical data had the method been an efficient one for establishing a diagnosis of the disease in the incipient stages. (2) The examination of the nasal septum and the nasal secretions is not of dominant value in confirming a diagnosis of leprosy in the early stages of the disease. (3) The conditions found in the noses of nonleprous children of leprous parents do not differ in important respects from those found in the descendants of nonlepers. (4) When it is not practicable to make a complete physical examination of all individuals of a class suspected of leprosy, the examination of the nasal septum and the bacteriological examination of the nasal secretions will prove of value by permitting the recognition of the most dangerous type of the disease, and is therefore worth while even if it does not reveal all cases of the disease in those who come under observation.

These conclusions are in the main in accord with the results of Thompson, Macdonald, Theroux, and Kolle. Brinckerhoff and Moore do not take issue with those who emphasize the importance of the nose as a site of leprous lesions, and who draw from that fact conclusions as to the prophylaxis of the disease. They recognize that nasal lesions in leprosy are of the utmost importance in this respect, but do not consider that the presence of a lesion on the nasal septum in an advanced case of leprosy has necessarily any significance in determining the site of the initial lesion of the disease.

Three new cases of leprosy developed during the year in New Brunswick, two males and one female. These patients were admitted to the Leper Lazaretto at Tracadie, N.B. The patients there now number twenty, twelve males (including one out since July 20 last) and eight females.

A suspected case was reported in the province of Ontario, but the clinical and bacteriological examinations proved that it was not leprosy.

No cases have occurred in British Columbia during this year.

Tuberculosis.—The work of the Canadian Association for the Prevention of Tuberculosis has been vigorously carried on during this year.

I am more and more convinced yearly that consumption is mainly spread from the homes of those of the wage-earning classes who live under the least favourable sanitary conditions, helped doubtless by the six 'D's,' damp, dirt, dust, drink, dissipation and destitution, and that it is there that the fight against it has to be made, if it is ever to succeed, and the disease be eradicated or even markedly diminished. The hospital for advanced cases and the sanatorium are good in their way for the help of the few. But even the sanatorium only reaches—at the best—incipient cases, after they are already so far advanced as to be readily recognized. We must go further back than that. We must get at the homes of the incipient cases *and the younger members of their families whilst still uninjured.* This can be done only by the domiciliary visit, to follow notification to the health officer, or the diagnosis at the dispensary, that the cold or cough for which a cough mixture is sought is really due to tubercular trouble. Then in addition to the one sufferer, the visitor goes to the home, and that visitor should be a woman. She can talk to and persuade the house mother as no mere man could do. She can impress upon her the four cardinal facts, which form a silver lining to the cloud which has long shadowed us: that tuberculosis is not hereditary; that it is infectious; that it is curable; and that it *is preventable.* Persuade her to adopt the open air life for herself and her household; get her to improve the sanitary conditions in and around the home; and to allow the younger members of the family to be medically examined, and the most stringent precautions carried out in the case of any one of them who shows any tendency towards the development of tuberculosis. Thus, and thus only, can we hope to get at this disease at its source and origin; and thus, and thus only, may we hope to ever stamp it out.

Pellagra (pelle, skin; *agra,* rough).—The recognized presence of a large number of cases of pellagra at the Peoria State Hospital, at South Bartonville, during the early part of August, 1909, is a matter of the greatest interest to the medical profession and of the utmost significance in the public health supervision of the state of Illinois.

Suddenly, and without previous warning, it was found that there was prevalent in Illinoois a disease which, during the past 175 years, has slain its thousands in the old world; a disease so unheard of in the United States, until two years ago, that the name conveys but little significance to the greater number of the physicians of the northern states; a disease which has been, to a great extent, practically ignored by American text-book writers.

True, quite a number of cases of pellagra had been reported within the previous three years, in Alabama, Georgia, South Carolina, and other southern states, but little attention had been given to the disease in the northern states, where the malady, if considered at all, was deemed one peculiar to the south. Certainly there had not been a suspicion of any prevalence of pellagra north of Mason and Dixon's line.

The disease usually manifests itself in the spring of the year, with vague symptoms of bodily weakness, headache, depression of spirits, sleeplessness, cramps, vague but often severe pains in the spine and joints, vertigo and dyspepsia. It will

be noted, in passing, that among the earliest or premonitory symptoms, those of nervous and even mental origin are manifested.

From the commencement an erythema, not unlike a severe sunburn, is observable on those parts of the body which are, as a rule, unclothed and exposed to the sun. The eruption is characteristic. It appears suddenly, first on the back of the hands and feet, then on the forearms, legs, chest, neck, and face. The patches of erythema are irregular in outline and intensity. The affected area is swollen and tense, and is the seat of burning or itching sensations, which become particularly acute on exposure to the sun. The congestion disappears completely, but temporarily, on pressure. Petechiæ are common on the affected parts, and blebs may form with clear, opaque or blood-stained contents of feebly alkaline reaction. The eruption usually lasts about a fortnight, and is followed by desquamation, which leaves the skin rough, thickened, and permanently stained of a light sepia colour. It is on account of this roughness of the affected skin that the disease is called 'pellagra,' an Italian word meaning rough skin.

Implication of the nervous system is indicated by tremour of the tongue, exaggerated deep reflexes, and mid-dorsal spinal tenderness. The patient suffers from obstinate sleeplessness, occasionally from uncontrollable sleepiness. He experiences great weakness, especially in the lower extremities, and is subject to peculiar attacks of giddiness, with a tendency to fall forwards or backwards. Another characteristic symptom is a feeling of burning in the palms of the hands and the soles of the feet.

As a rule there is no marked permanent elevation of temperature, but periods of slight fever occur irregularly.

Two or three months after onset symptoms abate and, although the skin remains dark-coloured and rough, the disease appears to have come to an end. Next spring, however, the whole series of phenomena recurs in a more severe form. The eruption assumes a darker colour. The depression of spirits deepens into melancholia, which may have maniacal interludes with a peculiar tendency to suicide, especially by drowning. The general feeling of weakness increases, the patient loses weight and is unable to work; his gait becomes uncertain and somewhat of the spastic paraplegic type. The pains in the head and back become very acute, and there may be lightning pains, cramp, twitching, tremors, and even epileptiform seizures of the cortical variety.

For several years the disease may thus recur in the spring with increasing severity. The patient becomes greatly emaciated, paralytic, and completely demented. Helpless, bedridden, suffering from incontinence of urine and uncontrollable diarrhœa, covered with bed sores and neglected, he dies from exhaustion or from some intercurrent disease.

It has been announced recently that a committee has been formed in London, the membership of which includes the Italian Ambassador, the Marquis of San Guilliano, Sir Thomas Clifford Allbutt, regius professor of physic in Cambridge University, and a number of prominent scientists and physicians, to promote the investigation and study of pellagra. The British Colonial Office has also contributed toward the carrying out of this project. It is proposed to send Dr. Sambon of the London School of Tropical Medicine, who has made a close study of the disease, together with a qualified staff, to a pellagrous area, to investigate the conditions and the various blood-sucking flies by which he thinks the disease is disseminated. Dr. Sambon holds the view that pellagra is protozoan in its origin, like sleeping sickness, and many skilful observers are said to be favourable to his opinions. It is only within the past year or so that the existence of pellagra on a wide scale has been recognized generally in America. Now, however, it has been established clearly that pellagra is prevalent in certain parts of the United States and that the disease is increasing. Pellagra, or as the Spaniards first termed it, the disease of misery, is emphatically a disease of the very poor. For long, in Italy and in other lands in which the malady exists on a

large scale, its origin and dissemination have been attributed to the ingestion of unripe, or mouldy, musty corn. On the face of it this theory has much in its favour. In Italy, in fact, in all lands in which pellagra is rife, the disease follows, or at any rate seems to follow, the ingestion of maize in bad condition. The Italian authorities are so convinced of the validity of this view that in Italy the law makes pellagra a notifiable disease, prohibits the sale of bad maize, and makes compulsory on local authorities the construction of drying houses for maize. Furthermore, the carrying into effect of these regulations has decreased the prevalence of the disease. However, although many things seem to point to maize unfit for human food as the *fons et origo* of pellagra, it may, after all, be but a contributory cause. It is yet within the remembrance of the present generation that malaria was opined to be caused by ground exhalations, and it was a considerable time before its disseminatiton by the mosquito was generally conceded. Since then, however, the transmission of disease by insects has been shown to be remarkably frequent, and it would be rash at present to deny the possibility of such transmission in the case of pellagra.

Hookworm Disease (Uncinariasis).—Attention has recently been sharply drawn to the prevalence of this disease in the southern states of the American Union, principally by Dr. Stiles, of Washington, D.C. He states that there are about 2,000,000 of the southern rural population infected with this parasite, among whom there is probably either directly or indirectly, a very high mortality. This is another communicable disease.

At a First Conference to discuss Hookworm disease, held in Atlanta, Ga., January 18 and 19, 1910, Dr. Stiles stated that the earliest hookworms ever known were described in 1782 by a German clergyman—Geoze, giving to them the German name Haakenwurm. A few years later another German scientist came across numbers of the same group of parasites and used the term 'uncinaria.' In 1837 Dubini was performing an autopsy in Milan and found in a cadaver a peculiar parasite with which he was not familiar. It proved to be new species. He called it Ankylostoma duodenale. The first cases of infection with the American species of hookworm which were found were the following: One case observed by Dr. Clayter in a patient from Westmoreland county, Virginia; one case in Galveston, Texas, observed by Dr. Allen J. Smith; several cases in Florida, which were handled by Dr. Guiteras. Personally the speaker had examined about one hundred and thirty cotton mills in the south, and eight milling camps, and in many instances men, women, and children in these mills infected with this disease had it to such an extent that the diagnosis could be made by an expert without the aid of the microscope. Hookworm disease as found in the United States had been traced to the west coast of Africa, and as far as the pigmies of Africa. Unquestionably the negroes must have brought many hookworms to this country. It was an academic question whether the Indians in this country had the disease before the white people came here. Seventy-nine per cent of the negro farm houses which he had examined and tabulated in North Carolina, South Carolina, Georgia, Alabama, and Mississippi had no privy connected with them. Practically eighty per cent of the negroes in the rural districts of the south were living under sanitary conditions which were not one iota better than those described for the savage tribes of Africa, and forty per cent of the white farm houses he had examined were in no better condition. The distribution of the disease was a natural result of the large negro population, of the unsanitary habits of the people, of the character of the soil and climate. There was probably no disease known in the medical profession which was more easily diagnosed, more easily treated, and more easily prevented than hookworm disease.

INTERNATIONAL OFFICE OF PUBLIC HEALTH, PARIS.

The International Office of Public Health, to the establishment of which all the governments that took part in the sanitary conference at Rome in 1907 agreed, has

been at work for about a year, and has issued monthly since January last a *Bulletin* containing information with regard to infectious diseases and sanitary laws and regulations in the participating countries. The idea of establishing such an office was first mooted at the International Sanitary Conference in Vienna in 1874, but nothing came of the scheme then put forward. At the conference at Washington in 1881 proposals for the dissemination of information as to cholera, plague, and yellow fever were considered, and at the conference at Rome in 1885 a proposal was discussed favouring the establishment in each country of a central office which should collect information and warnings with regard to sanitary matters, and exchange such information with the offices of other countries. At the conference in Paris in 1903 it definitely proposed to centralize all information with regard to epidemic diseases and the means of preventing them, with the object of furnishing information with regularity to all the participating states. The duty of taking the initiative in organizing the international office of public health was left to France, and in 1907 a scheme was discussed at a meeting of representatives of thirteen governments held at Rome. The countries concerned—Great Britain, Belgium, Brazil, Spain, the United States, France, Italy, Holland, Portugal, Roumania, Russia, Switzerland, and Egypt—agreed to contribute proportionately to the expense of establishing and maintaining the office. A Permanent International Committee was formed of representatives of the governments concerned.

The arrangement which was concluded for a period of seven years definitely authorized the new office, provided for its control by an international committee, outlined its duties, and apportioned the expense of maintenance among the interested countries. The true object of the office is, to quote the words of the statutes of constitution, 'to collect and bring to the knowledge of the participating states the facts and documents of a general character which relate to public health, and especially as regards infectious diseases—notably cholera, plague, and yellow fever, as well as the measures taken to combat these diseases.

As an illustration of the kind of information given in the *Bulletin,* we may say that the issue for September contains a copy of the agreement between the French and Belgium governments of May, 1895, as to the notification of communicable diseases occurring on the frontier; a decree of the French government with reference to the special measures to be taken against the importation and propagation of cholera in France; a copy of a circular on the same subject issued to prefects; a new French decree as to inspection of vessels coming from ports infected by cholera; a similar decree issued by Belgium; and the text of the German law as to the notification of certain diseases and as to the notification of ships in German ports.

Under the second section of the *Bulletin* we find lists of cases of deaths from cholera, plague, and yellow fever, received down to September 15, and a note on the action taken by Turkey, Russia, Germany, Italy, Holland, Anglo-India, and Belgium, with reference to recent occurrences of cholera. The third section contains articles, for which apparently the director is responsible, on the filtration of drinking water by non-submerged sand filters, and the conclusion of an article on the purification of waste waters from manufactories. Under the fourth heading we find an abstract of the sanitary statistics for 1908 of the twenty principal towns of Egypt. The fifth section consists of short abstracts of papers and reports published in various periodicals. The committee is to meet annually in October, and will hold a second meeting if necessary in April.

Feeling doubtless that this nation cannot afford to lay behind in the world-wide battle, now being waged by all civilized peoples against infectious disease, Canada has during this last year, under your decision and administration, acceded to the Agreement of Rome of December 9, 1907, for the creation of an International Office of Public Health at Paris, and to have thus come into relation therewith.

Senate Public Health Committee.—I was called upon as Director-General of Public Health to submit to the Standing Committee of the Senate on Public Health a report upon Water Supply, Disposal of Sewage, and Pollution of Streams. I now include copy of my report as part of my official work of the year.

MEMORANDUM SUBMITTED ON WATER SUPPLY, DISPOSAL OF SEWAGE, AND POLLUTION OF STREAMS.

The subjects of water supply, disposal of sewage, and pollution of streams, form a group naturally co-related and co-ordinate.

A proper drainage system is the first great duty of municipal sanitation. It must precede the waterworks, and be in readiness to carry off the water. The pollution of streams is so closely connected with the disposal of sewage and waste, that these two subjects may to a great extent at least be considered together. And yet the very worst use that can be made of drainage is to pollute some river or stream with it. It is a waste of valuable fertilizers and a wrong to other communities and individuals down stream.

Sewage disposal.—If the human body is to be maintained in health and vigour, it is essential to dispose of all those matters eliminated from the animal system, whether in health or disease, as well as all other animal and vegetable refuse in the vicinity of inhabited buildings, as speedily as possible before decay begins, as in the early stages of putrefaction the matters evolved are highly injurious to health and dangerous to life. This is more particularly the case wherever human beings congregate in any numbers, as in villages, and still more so in towns.

As the size of the community increases, so does the difficulty of getting rid of the refuse already referred to as dangerous to health, and this more especially applies to the liquid refuse which contains foul matter in suspension as well as in solution.

Dry animal and vegetable refuse may be collected in ash-bins and be carted away, but liquid matter requires more elaborate arrangements.

Where a dry method is in force for the collection of the excrementitious matter, it is called the system of 'conservancy' or 'interception.' There are a great variety of appliances for this purpose, such as earth closets, pails, and tubs.

Under this head are also included middens and cesspits, as they have to be periodically emptied.

In places where no main sewers exist, and where there is no river or other conduit into which the drainage of a house may be led, it may be necessary to have recourse to a cesspit. It is, of course, a very objectionable method.

Such pits should be sufficiently large to contain all the drainage for several months, but it will be well to remove it frequently by pumping; there is usually some garden ground to which the sewage can be applied.

Cesspits should be placed as far as possible from any dwelling, and cut off by a disconnecting trap, and properly ventilated with inlet and outlet shafts provided with suitable cowls.

As regards the disposal of the sewage from cesspools, the matter should be rapidly mixed with fresh dry earth in a shallow excavation in some convenient place, and used as manure. Fresh, dry earth is a valuable disinfectant, and the mixture would form a very valuable form of manure, instead of being not only wasted, but costing large sums to dispose of, as is the case with many sewage systems at the present time.

Temporary dry earth latrines.—In latrines for the use of troops and for temporary purposes, the earth is very often kept in boxes on the floor of the various compartments, a scoop being provided with which to supply the earth; but the application of dry earth in this manner is, as might be expected, too often neglected, so that it is not a very perfect arrangement. In connection with it, sheds must be provided to store the earth, and also hot places to dry the latter when required.

Sewerage or water-carriage necessitates considerable expense laying a series of drains with proper gradients, efficient traps and ventilation, as well as the provision of a proper outfall, and sewage-disposal works in most cases; the cost of maintenance and supervision is, however, comparatively small. Arrangements of this magnitude are often beyond the attainment of small communities.

The following are the systems of collection and removal at present in use:—

(*a*) The combined system; by which all sewage, surface water, subsoil water, and manufacturer's refuse are carried into the same sewer.

(*b*) Modification excluding subsoil water; which is a modification of the preceding system (*a*), in so far as that the subsoil water is carefully excluded from the sewers.

(*c*) Absolutely separate system; which involves the use of three sets of drains, one for foul water or sewage, one for surface water, and another for subsoil water.

(*d*) Partially separate system; which is a combination of the 'combined' and 'absolutely separate' systems.

Drains and drainage may be considered under the following separate heads:—

(*a*) Sewage, including foul water from w.c's., urinals, sinks, wash-houses, &c.

(*b*) Surface drainage, comprising water from roofs, roads, pavements, &c.

(*c*) Subsoil drainage.

It is necessary, before preparing a design for the sewerage of any locality, to decide which of the water-carriage systems is to be adopted.

The 'absolutely separate' system is undoubtedly the most perfect when carried out in its entirety, the great advantage being that the number of traps required to prevent the escape of dangerous gases from the foul-water drains is reduced to a minimum; and, of course, no sewer-gas can escape at the gratings for surface water; thus the dangerous area is materially reduced, and may, to a great extent, be isolated. The size of the sewers may also be more easily adapted to the quantity of sewage they will have to convey, and greater facilities are afforded for their regular supervision and cleansing, the tendency to the deposit and formation of foul gases being at the same time minimized. The foul water obtained by this system, owing to the exclusion of the surface water, is uniform in composition, and much reduced in quantity, therefore its purification and utilization are less difficult.

The disadvantages of the 'absolutely separate' system are that three sets of pipes (one for sewage, one for surface water, and another for subsoil water) are required, and might lead to mistakes being made by workmen in connecting new drains to the wrong set of pipes, and also that the surface water from yards and streets is often very foul, particularly when a storm succeeds a period of drought, unless the yards and streets are constantly cleansed and well scavenged.

It is customary to base the estimate of the quantity of sewage to be dealt with at so much per head of population for the discharge in twenty-four hours. An allowance must also be made for the prospective increase of population; in the case of a town, its present rate of increase as obtained from the census returns of the past ten years would be considered a guide; this rate, would, however, require modification according to a carefully formed opinion as to whether the same rate of increase was likely to be maintained. Attention should be given to the industrial and manufacturing possibilities of the locality, as they may not only affect the amount of sewage to be dealt with, but also its character. The estimate should be framed so as to provide for the probable requirements during the next twenty-five years of the different portions of the district to be drained, as it is not always practicable to maintain a constant allowance throughout.

Water supply as guide.—The water supply of the district may be considered as affording a constant daily supply of sewage of equal amount.

Admission of rainfall.—The admission of the rainfall to the drains complicates the question, as it is difficult to calculate the exact amount of rainfall to be allowed for, even when it is limited to that collected from roofs, back-yards, paved surfaces, &c., as a considerable proportion finds some other outlet.

The nature of the surface drained, and its inclination, must be considered in connection with the question of admission of surface water.

The surface water from rural or uncovered areas only arrives at the sewers by slow degrees, and a great deal passes off as subsoil water, and by evaporation.

The surface water of towns is for the most part so impure as to necessitate its being treated as foul water.

Efficient removal necessary.—It has already been pointed out that it is most essential to health to provide for the efficient removal of all decomposing refuse, as well as the foul water, from houses and factories as soon as possible, before putrefaction sets in; the question of its final disposal then becomes a matter of the greatest importance.

At one time, when communities were small, the final disposal of their sewage was accompanied with but little difficulty; the sea or the nearest river was the natural receiver into which it was poured without hesitation, and without any apparent harm or injury to other communities situated lower down the stream. In the former cases, no evil results followed, and in the latter also the action of the stream on it is of such a nature as to purify the sewage to a great extent by processes which are now daily becoming better understood; the quantity, however, must not be too great.

The increasing size and number of villages and towns along the river banks have, however, in many instances, become so great as to gradually poison the water supply to the towns below.

It is possible to form an estimate as to the amount of sewage which can be dealt with by a flowing stream, if one remembers that the bacteria, always naturally abundant in river water, are able by the aid of the oxygen dissolved from the air to consume more or less rapidly the organic matter. It is evident that the volume of the sewage and the oxygen required by the organic matter in it as measured by permanganate, i.e., the 'oxygen consumed,' should bear some relation to the flow of the river and its aeration. But, in addition to this, it is also desirable to take into account the amount of available oxygen, as nitrate and nitrite, since it has been proved that, always with the help of bacteria, the oxygen of nitrates and nitrites is available for the burning up of organic matter.

The following are the systems of sewage disposal which have so far been tried and adopted in many instances.

The sea, or tidal estuary.—Many engineers of high standing maintain that where practicable the sea, or the tidal estuary of a river, is the right place for the discharge of sewage, as no costly works are then necessary. This system involves the direct discharge of the sewage at ebb tide, so as to carry out the sewage to a good distance from the shore and diffuse it into the sea before the tide begins to flow. Great care is, however, essential to secure this result. Float observations should be made not only of the surface tides and currents, but also of those at different depths, and the effect on the sewage, in consequence of the difference between its specific gravity and that of salt water, carefully considered. The rise and fall of the tides, and the configuration of the coast line, must also be studied as bearing on the question.

Where tidal currents exist, the point of discharge should be situated below the place, in the direction of the falling tide, and not above it.

Sewage discharged into land-locked harbours and deep bays soon becomes a nuisance, as is evidenced by many seaside towns.

Sea water delays the oxidation of organic matters, so that the foul constituents of crude sewage, which in river water would be liberated and got rid of in time, are

preserved in sea water, and if washed up on the foreshore, they accumulate and form dangerous deposits ready for the quickening action of the summer sun, when gases injurious to health are evolved.

Irrigation.—Another system is that of irrigation, which consists in passing the sewage over land, in order to use its fertilizing properties, and at the same time to purify it before running the liquid into a river or other watercourse. Loamy porous soil is the best for sewage irrigation from a sanitary point of view.

Unless the subsoil is sand or gravel, it is usual with the denser top soils to provide some subsoil drainage, increasing it in amount and depth with the density of the soil to be utilized, so as to give a free exit for the water, and prevent the ground from getting water-logged.

Where the land is of a stiff clayey nature, there are considerable difficulties in adapting it for irrigation. In undrained clay land, under ordinary circumstances cracks one and two inches wide and five feet deep are sometimes met with, and it has been found that these are intensified in drained land, with the result that direct passage of sewage and surface water into them has occurred on sewage farms of this nature, so that the effluent is not purified as intended. It is thus very unsuitable for irrigation, unless the surface is specially prepared, as mentioned under the head of broad irrigation,and other treatment should be resorted to.

Different soils vary very considerably in their power to decompose sewage by utilizing the ammonia (the prineipal fertilizing agent) and other constituents which are capable of nourishing vegetable life, as well as at the same time effecting its purification.

Settling tanks.—Before applying the sewage to land, it should be allowed to settle, so as to get rid of the heavier portions, as well as the silt, grit, &c., derived from the streets and roads. To effect this, settling tanks have been adopted.

Settling tanks are constructed on two principles: that of 'quiescence' or 'absolute rest,' and 'continuous flow'; the latter is found to answer best, provided the sewage is not less than two hours in passing through the tank, and suitable chemicals are properly applied. These tanks should be cleaned out once in three days.

Filtration (Intermittent downward).—Another method of irrigation, known as intermittent downward filtration, is sometimes employed.

Mr. Bailey-Denton defines intermittent filtration as 'the concentration of sewage at *regular intervals* on as few acres of land as will absorb and cleanse it, without preventing the production of vegetation.'

He states that the sewage of 1,000 persons can be applied to an acre of such soils as are most suitably constituted, and of 250 to those badly constituted.

Heavy clay soils are not adapted to this purpose.

When land is to be used as a filter, the surface should be laid out in level beds, and the sewage applied to each bed then passes vertically downward through the pervious stratum, from which, in a more or less purified condition, it escapes by means of subsoil drains, or an existing porous subsoil of sand or gravel, into a stream or watercourse.

When the filtration areas are very porous, and the sewage is applied in small volumes by gravitation from grounds not provided with storage tanks, the distribution would be made by ridge and furrow, so as to ensure uniformity of application.

Land thus used as a sewage filter requires constant aeration by being dug or ploughed over.

Precipitation.—The conditions for a good precipitating agent are as follows:—

It should be cheap and abundant.

It should cause rapid subsidence of the precipitate formed.

It should be neither actively nor cumulatively poisonous.

It should not have a tendency to render any portion of the suspended matters soluble.

It should not have any distinct colour, nor generate one with the substances it may encounter.

It should ensure the production of a precipitate of minimum bulk with maximum defecation.

The resultant effluent should be alkaline.

The precipitate or sludge should part with moisture readily.

It may be further noted that sewage is more easily precipitated when warm than cold, and also when the precipitating agent is added to it *hot*.

Lime process.—The lime process consists in the addition of lime in a perfectly caustic state, in the proportion of twelve grains per gallon, after a preliminary straining of the sewage.

The Amines process.—In this process the precipitants employed are herring-brine and lime in the proportion of four grains of the former and twenty-two and a half of the latter per gallon.

Lime and sulphate of iron.—For some years lime in solution and sulphate of iron have been used as precipitating agents in connection with the disposal of the Metropolitan sewage at Barking and Crossness.

Lime and alumina.—The Glasgow Sewage Works deal with the sewage of the eastern district of the city of Glasgow, and were opened on May 2, 1894. Lime and alumina are the precipitants employed.

Manganese compounds have long been regarded as the most efficient agents for the clarification of sewage, but their cost has hitherto prohibited their use for this purpose.

The A B C process.—This consists in the use of alum, blood, and charcoal, in certain proportions, as a precipitant. The blood is now omitted.

The International process.—In the International process a magnetic precipitant and deodorizer, called ferozone, is used, and the liquid is afterwards filtered through a polarite filter.

Peroxide of chlorine is employed as a sterilizing agent in this process; it is produced by the decomposition of chlorate of potash by sulphuric acid. The gas thus produced is soluble in water, is readily decomposed by light, heat, and by contact with organic matter, to which it has the property of transferring its oxygen in a very energetic manner. The process has been applied by Mr. Howatson to the purification of potable water at Ostend, Haeren, and other places with satisfactory results, and it is claimed to be equally applicable to the purification of sewage. Plant for the latter purpose has been erected at Wenduyne, Heyst-sur-mer (Belgium) and Middelkerke.

Conder's sulphate of iron process.—Sulphate of iron was advocated by the late Mr. F. R. Conder, M.I.C.E., as a participant. The process consists, briefly, in treating the sewage of each house to a dose of solution of iron, by which it is claimed that the putrescible, or putrescent, matter that it contains is immediately split up into its innocuous elements; the liberation of gases ceases, and the mineral matter thus set free subsides as a fine black silt, that is easily swept along by a current of half a mile per hour.

The Hermite process.—The process depends on the formation of nascent oxygen held in suspension by hypochlorite of magnesia, obtained by passing a current through the sea-water between platinum and zinc electrodes. The oxygen thus obtained is the antiseptic.

Comparative advantages of the different precipitants.—The following are extracts from the report of the State Board of Health of Massachusetts, giving the general view of the results of their investigations:—

'The lime process has little to recommend it. Owing to the large amount of lime water required, and the difficulty of accurately adjusting the lime to the sewage, very close supervision would be required to obtain a good result, and even then the result is inferior to that obtained in other ways.

'Precipitation by copperas is also somewhat complicated, owing to the necessity of getting the right amount of lime mixed with the sewage before adding the copperas. When this is done a good result is obtained. The amount of iron left in the effluent is much greater than with ferric sulphate, owing to the greater solubility of ferrous hydroxide. Ferric sulphate and alum have the advantage over both lime and copperas, that their addition in concentrated solution can be accurately controlled, and the success of the operation does not depend upon the accurate adjustment of lime or any chemical to the sewage.

'The results with ferric sulphate have been, on the whole, more satisfactory than those with alum. This seems to be due in part to the greater rapidity with which precipitation takes place, and in part to the greater weight of the precipitate. It is probable, from the greater ease with which ferric sulphate is precipitated, that it would give a good result with a sewage that was not sufficiently alkaline to precipitate alum at once.

'It is quite possible that the same process would not give equally good results upon all kinds of sewage. Special sewages may require special treatment. For this reason, and also on account of changes in the prices of the several chemicals, it is impossible to say that one precipitant is universally better than another.

'In the later experiments, from 25 to 43 per cent of the soluble organic matter, as shown by the albuminoid ammonia, and loss on ignition, was removed by copperas, ferric sulphate, or alum, costing from 30 to 40 cents per inhabitant annually. In addition to this, all of the suspended matter was removed.'

Evaporation.—Liernur's English Syndicate state that, 'Under their system, in towns where the water supply is limited to small quantities, as is the case with the greater number of towns on the continent, the entire quantity of sewage conveyed through the pneumatic sewer is treated by the boiling and evaporating process. For instance, in Trouville the average quantity of sewage received in the pumping station varies from 10 to 15 litres, equal to about 2½ gallons to 3½ gallons per inhabitant per day. This quantity includes everything which is to be considered as polluted matter, viz.: foecal matter (excreta and urine), closet and toilet water, bath water and kitchen slops, from all houses, hotels, restaurants, schools, hospitals, &c.

'This quantity is comparatively small, and can be sterilized by boiling heat, and reduced into a valuable dry manure without great expense and with a notable pecuniary advantage, as, with the improved evaporation process used, it is possible to evaporate one ton of sewage with 1 cwt. of stone coal.

'Naturally in towns where the water supply is unlimited and amounts to something about 50 or even 100 gallons per inhabitant per day, as this is very often the case in English towns, it is not intended to reduce this immense quantity by the evaporating process, except where it is possible to utilize the heat from refuse destructors. For these cases it is proposed to combine the evaporation process with Liernur's bacterial or biological treatment. The combination allows first, to submit the whole quantity of the liquids to the natural biological purifying process, which is sufficiently known in this country, so that it is useless to give here a special description of it. The sludge is pumped out and converted into a dry manure powder, by the process described, valued at four pounds to five pounds (sterling) per ton.'

Electrolysis.—Precipitation by electrolysis, which is also known as 'Webster's' process, for the electrical purification of sewage, has been tried successfully at Crossness, and gives very promising results both as regards the purity of the effluent and the eventual cost of the process.

Bacteriolysis.—The result of experience with all the systems that have so far been cited and put to practical proof are unsatisfactory, so much so, that attempts are being made in a great variety of ways to discover and elaborate better methods for the disposal of sewage.

Irrigation farms often create a nuisance at some time or other, and there is an absence of the power of control in their use, as the sewage must be got rid of, so it has to be applied to the land, whether such application at the time is likely to prove beneficial or not, either to the crops or for the purification of the sewage itself.

Should the land become water-logged during heavy rains, or during a severe frost, the crude sewage runs over the surface without any beneficial effect on it, and the effluent is then discharged practically unchanged.

If, on the other hand, the land is porous enough, or sufficiently well drained to prevent its becoming water-logged under other circumstances, the effluent will run through too freely to admit of its proper purification during dry weather.

Chemical methods of precipitation have also more or less failed, for as soon as the effluent becomes sufficiently diluted with pure water putrefaction sets in.

In all these systems there is the sludge to be disposd of, the methods for doing which are described later.

At an early stage in this important inquiry the fact that there are certain micro-organisms which have a destructive action on sewage and other impurities was recognized, but the principles were but little understood, and it is due to the failures above alluded to that extensive experiments have during the last few years been made in order to discover the nature and extent of their action, and whether it was possible to solve the problem by their aid.

Massachusetts experiments.—Amongst others the Massachusetts State Board of Health during the years 1889-90 made some very valuable experiments at their experimental station at Lawrence, to ascertain whether sewage could be disposed of on biological lines.

Dr. Frankland, many years ago, suggested the intermittent filtration of sewage through a thickness of five or six feet of material; and Mr. Bailey Denton and Mr. Baldwin Latham were among the earlier engineers who adopted the method.

The simplest theory of the working of any filter is that its action is mechanical, indeed the word 'filter' has come to mean ordinarily a more or less perfect strainer. In this aspect the working of the filter is continuous, but it soon chokes and must be cleaned.

The intermittent filter on the other hand presents quite different conditions. It is no longer a mere mechanical strainer. No doubt when first established there may be a period at the outset when it effects little more than a mechanical purification; but, under the best conditions, there speedily begins a change of the profoundest significance. The filter becomes a method of developing the conditions which favour the action of bacteria by the exposure of the sewage in the presence of air.

The Massachusetts experiments may be said to have taken up the question at this point. The experiments show that a sand filter does not affect the nitrification when first used. Time is necessary for it to accumulate a suitable colony of bacteria. Furthermore, the colony adjusts itself to the work it has to do. If, then, the amount of sewage is suddenly increased, and is contained at the larger amount, the nitrification will at first be incomplete, but the bacteria will soon multiply and purification

will again become satisfactory, often amounting to the destruction of 99½ per cent of the nitrogenous matters in the sewage, and all but a fraction of one per cent of the bacteria.

Septic tank system.—In this system no chemicals are employed, and there is no 'treatment' of the sewage in the ordinary sense of the term; its purification being accomplished entirely by natural agencies.

The septic tank itself is merely a receptacle designed to favour the multiplication of micro-organisms and bring the whole of the sewage under their influence. To this end the tank is of ample size, though not larger than would be necessary with chemical precipitation, and covered so as to exclude light and, as far as possible, air. The incoming sewage is delivered below the water level; and the outlet also is submerged, with the twofold object of trapping out air and avoiding disturbance of the upper part of the contents of the tanks. On entering the still water of the tank the solids suspended in the sewage are to a great extent disengaged, going either to the bottom or to the surface, according to their specific gravity. In the absence of light and air, the organisms originally present in the sewage increase enormously, and rapidly attack all the organic matter. By their action the more complex organic substances are converted into simpler compounds; and these in turn are reduced to still simpler forms, the ultimate products of the decomposition in the tank being water, ammonia, and carbonic acid and other gases. Other nitrogenous compounds may also be present, but they will all be soluble in a slightly alkaline solution—a condition which obtains with every normal sewage.

The sewage travels so slowly through the tank that every particle takes some twenty-four hours in passing through it. This period of time is sufficient for such a complete sedimentation and liquefaction of solids to be effected that the tank effluent should contain but a few grains per gallon of fine suspended matter. The black deposit which settles in the bottom of the tank was found after fifteen months' working to be under two feet in depth. This deposit consists of indigestible material, and includes mineral matter, cellulose, vegetable and elastic fibres, cartilage cells, &c. The gases given off from the tanks are not offensive, but are highly inflammable.

On the top of the sewage in the tank a scum is formed, consisting of the floating matter undergoing decomposition. The heavier suspended matter settles at the bottom of the tank, together with the insoluble residue from the decomposition of the sewage solids. The bulk is considerably swollen by the gases which are formed during the decomposition of the organic matter still adhering to the deposit, which would bring the whole mass to the surface were it not that the residue is heavier than water, and sinks again to the bottom as soon as it is sufficiently loosened to allow the escape of the gas. In addition to its own decomposition, the deposit is thus subjected to a continual washing action, by which it is ultimately reduced to an inert and inoffensive ash.

Thus the tank does away with the necessity for chemicals and filter-presses or other apparatus for disposing of sludge, and produces an effluent which can be filtered without risk of clogging the filters.

The effluent, after flowing from the gauge-well, passes into a shallow aerating-trough, over the sides of which it falls in thin sheets into channels leading to distributing wells. In these wells valves are placed, controlling the flow to the distributing channels on the surface of the filters.

The filtration of sewage or sewage effluent is not a mere straining action. If it were so, the filters would soon clog and become useless. Moreover, the effluent from the septic tank, being free from solids, is not susceptible of improvement by straining. The work to be done consists in the oxidation of the ammonia formed in the tank. This is thus converted into nitric acid, which at once combines with the bases present to form nitrates.

This oxidation, like the previous decomposition, is the work of micro-organisms, but of a kind totally different from those which operate in the tank. The latter are largely of the species classed as anaerobic, living in the absence of air and light, and exercising in many cases a reducing or deoxidizing action. The organisms which work in the filter, on the other hand, are aerobic, the presence of oxygen being absolutely necessary for their life and work. Consequently the conditions prevailing in the tank must be reversed in the filter, to which oxygen must be freely supplied.

To this end the filters are best constructed of some porous material, such as coke breeze or crushed furnace clinker, affording abundant interstitial space.

The great advantage of this system is that the sludge is got rid of.

The extensive adoption of the Septic Tank system to deal with the sewage of mansions and public institutions has necessitated the design of special types of gear adapted for use in such cases. It is especially desirable that apparatus for small installations, which in many cases has to be erected by country workmen without any mechanical knowledge, should be so simple as to prevent all possibility of misplacement. This requirement has been completely met, and in the case of two filters all the parts are contained within a single casting.

A further improvement, for the use in cases where flows have to be dealt with, consists in a simple attachment by means of which the flow is kept back from the filters until a sufficient quantity of tank effluent has accumulated to fill one of them, and then released, so as to secure a rapid filling.

As this method of sewage treatment dispenses with the use of lime or other chemicals which might be injurious to fish life, it will be found especially well adapted for use at the numerous seaside places where valuable oyster beds or fishing banks are endangered by the discharge of untreated sewage in their vicinity, and where the problem of the substitution of a harmless effluent is very difficult of solution.

The classification of organisms which purify sewage.—The two principal classifications of organisms in relation to their capacity for breaking up organic matter are:—

1. Those that do, and those that do not, liquefy gelatine.
2. Those that live in the presence of oxygen, and those that live without it.

The first two classes are named liquefying and non-liquefying organisms.

The second two classes were named by Pasteur aerobic and anaerobic, and he pointed out that the changes which arise from fermentations produced by the anaerobic varieties in the presence of common organic substances, such as those contained in sewage, were much more rapid and violent than those which occur among the fermentations from the life processes of the aerobic varieties.

If the amount of the organic matter contained in the sewage of a large town seems to be in excess of the capacity of these natural forces to deal with, that difficulty disappears in the light of the prodigious and almost incredible capacity of these organisms to increase in numbers and to consume any amount of food which could possibly be supplied to them.

Disposal of sludge.—The disposal of the sludge, obtained under many of the systems of sewage disposal already described, is always a great difficulty. Efforts have been made, in connection with the chemical process, to utilize the sludge as manure. At Birmingham, the sludge, as produced, is simply dug into the land, a sufficient acreage having been purchased for the purpose.

In the case of the metropolitan sewage, the sludge is pumped into sludge vessels, each capable of conveying 1,000 tons, and discharged in 'the Barrow Deep, commencing at a point ten miles east of Nore, and proceeding thence from five to ten miles down that channel.' Although about 10,000,000 tons of sludge have thus been deposited at this point, the channel is totally unaffected, and the surface of the sand-

banks is as clean as in 1888. Mr. Dibdin considers this to be due to the animal and vegetable débris being rapidly consumed by the organic life in the sea water.

A similar plan is adopted for the disposal of sludge by the corporation of Salford, and quite recently by the corporation of the city of Manchester.

The best method of utilizing the sludge is by separating the liquid from the solid matter, so as to reduce the bulk as much as possible. It is essential that this be done early, to prevent the sediment fermenting, and thus spoiling the purity of the effluent. Generally, a few hours' rest will be sufficient to ensure perfect settlement; the water should then be run off quietly to about the level of the deposit. The deposit, or mud, thus formed is drawn off into suitable receptacles for further treatment and conversion into a portable manure. There are three methods of dealing with the sludge in additions to those already enumerated, viz.:—

(*a*) By evaporation.
(*b*) By mechanical treatment.
(*c*) By destruction.

Evaporation.—This may be done in dry climates, where the soil is porous, e.g., sandy, by forming large, shallow reservoirs with earth bottoms and sides, or by the use of tanks. The moisture is given off by evaporation, but in the former case chiefly by absorption, into the soil below, and the bulk is reduced to 20 per cent.

Mechanical treatment.—Mechanical treatment is that by means of filter presses. A filter press consists of a number of narrow cells held in a suitable frame, the interior faces being provided with appropriate drainage surfaces communicating with an outlet, and covered by a filtering medium, generally jute or hemp canvas, or other suitable material. The interiors of the cells so built up are in communication directly with each other, or with a common channel, for the introduction of the matter operated upon, and as nothing introduced into the cells can find an exit without passing through the cloth, the solid matter fills up their interior, the liquid leaving by the drainage surfaces. The cells of the machine are subjected to pressure, which increases as the operation goes on. The cells must of necessity be made mechanically true on the outer-touching surfaces, so as to prevent the material operated on escaping as the pressure increases.

Destruction.—Another process is that of destruction. Buildings called 'destructors' are used for the purpose. The object of a destructor is to convert the putrescent or decomposing matter contained in town refuse into fixed and harmless products by means of combustion; the organic products present are those converted into the comparatively, if not absolutely, harmless forms of water vapour, carbonic acid gas, and nitrogen, all of which are commonly found in ordinary atmospheric air. In order to avoid a nuisance, it is necessary that complete combustion should be ensured, and all dust arrested before the gases escape up the chimney.

For complete combustion a high temperature in the furnace must be maintained, and this demands a strong draught and a well distributed supply of air to the burning fuel. The lowest temperature necessary to deodorize the noxious fumes from burning ashbin refuse is 1,350° Fahr., but a higher temperature, of not less than 2,000°, is essential so as to ensure the destruction of all disease forms, as well as that of the gases and offensive vapours given off. By this means an efficient calcination and the reduction of all refractory materials can be effected so as to produce the minimum percentage of clinker and ash, of such a quality as will enable them to be utilized, and so not only save the expense of carting them away, and tipping to waste, but actually become a source of revenue; this is a powerful argument in favour of the employment of high-temperature destructors. An average residue of about one-third of the weight of the unscreened ashbin refuse of clinker ash is thus left, the two-thirds having been destroyed by fire.

With an efficient special furnace about six hundred weight of ashbin refuse can be burnt per hour with a good natural draught on a fire-grate 25 feet square. This may be increased to one ton per hour with a forced draught or air pressure of from 2½ to 3½ inches of water.

WATER SUPPLY.

Water is a prime necessity of life. Without it, terrestrial animal and vegetable life must cease to exist. The earliest settlements in all countries were, therefore, made in the neighbourhood of water. Towns and villages sprang up on the banks of streams and rivers, on the shores of lakes and in the neighbourhood of springs; or water was obtained from the soil around these early settlements by shallow excavations or wells. In modern times, sites for dwellings are not necessarily limited to a small area around a natural source of water. Our engineering knowledge enables us, on the one hand, to obtain water by means of wells and borings from the depths beneath the surface of the earth, and on the other, to convey water from a distance by means of conduits to the places where it is required.

Rainfall.—The rain that falls on the roofs of houses can be collected and made available as a means of water supply. To calculate the amount of water supply per head from this source, we must know the amount of roof space per individual (the slope of the roof must not be taken into account, but merely the area of horizontal surface covered by the roof), the average amount of yearly rainfall, and the average amount of evaporation of the rainfall.

The amount of evaporation from the surfaces of roofs may be taken as averaging throughout the year 20 per cent of the rainfall.

Rain, as it leaves the clouds, is water pure and simple, free from all foreign ingredients. In its passage through the air to the earth it may collect various impurities, gaseous and suspended. The rain falling in towns is found to have absorbed sulphurous and sulphuric acids, which are always present in the air of towns from combustion of coal and coal gas, and to contain numerous sooty patches.

When roofs are used as collecting surfaces for rain-water, the first portion of rain which falls and descends from the roof should be rejected, as it is liable to be much polluted with soot, vegetable matter (leaves), and animal matter (excrement of birds, &c.), washed off from the slates or tiles. After the first washing, the remainder of the water may be collected and stored. Rain-water should always be stored in as pure a condition as possible, otherwise the storage receptacle becomes coated with foul matters, which contaminate the water. The advantage of underground storage is that the water does not get frozen in the winter or unpleasantly hot in the summer. But, on the other hand, the tanks are often difficult of access. Underground tanks must be built of sound masonry or brickwork and lined with hydraulic cement. They should rest upon a bed of concrete and be covered over with arches of masonry or brickwork; and if there is a special danger of polluting material gaining access to the tank, they should be surrounded with at least a foot of well-puddled clay.

Rain-water is especially useful for cooking and washing on account of its softness, that is to say, its freedom from the salts of lime or magnesia in solution. When these salts are dissolved in a water they render it hard. Hardness is usually reckoned as equivalent to so many grains of chalk (carbonate of calcium) per gallon of water. A water containing more than 10 grains of chalk or its equivalent in other salts (sulphate of lime or magnesia, carbonate of magnesia, &c.), to the gallon is said to be hard. Hardness due to the presence of carbonate of calcium, held in solution by carbonic acid, is said to be temporary; for when the water boils, the carbonic acid is driven off, and the chalk, no longer able to remain in solution, is precipitated.

Upland surface waters.—In hilly districts, the water which flows off the hills in the form of rivulets or streamlets can be collected and stored by building an earth and masonry dam or barrier across the outlet of the valley to which the streams converge. By this method of collecting in 'impounding reservoirs,' large artificial lakes may be formed—capable of holding a supply sufficient for several months—at suitable elevations above the towns which they supply with water. A certain amount of 'compensation' water (usually estimated at one-third the amount impounded) must be allowed to pass down to any mill-owners on the streams from which the waters have been diverted.

Streams and rivers.—Streams near their sources, and passing through uncultivated land on hills and moorlands devoid of human habitations, are good sources of water supply; they form, in fact, those upland surface waters which have already been considered.

Streams and rivers in their course through cultivated valleys, with towns and villages on their banks, furnish water which must always be regarded as undesirable, and in many cases as dangerous for drinking purposes.

The composition of river water, as regards its mineral ingredients, is most variable. Fed from a variety of sources, by springs and streams in the uplands, by surface drainage, by springs in their beds, and by other streams and rivers throughout the whole of their course, rivers are a combination of spring and surface waters, and present sometimes mainly the characteristics of the one and sometimes those of the other.

All rivers, as being the natural drainage channels of the surrounding land, must be subject to pollutions of animal origin. The surface and subsoil drainage from manured land under cultivation, the sewage effluents from isolated houses, the slop waters and the sewage of villages and sometimes even of towns, and the waste products of industries on their banks frequently flow into the river. Towns, as a rule, draw their supply of water from a river above the spot at which the sewage of the town is discharged. But the intake of the next lower town on the banks of that river must necessarily be from a stream already polluted with sewage; and the question arises, can a river once polluted with sewage, and with all the possibilities of specific disease contamination thereby introduced, ever be a safe source of supply below the point of pollution? If the river into which the sewage is discharged consists of clean and hitherto unpolluted water, the oxygen dissolved in it will, to a certain extent, oxidize the organic matters of the sewage, this destruction being very largely effected through the agency of aerobic or oxygen-requiring bacteria. If, too, the dilution of the sewage with clean water is considerable, plant life is not interfered with but continues to give off oxygen, reoxygenating the water, and enabling the process of purification by oxidation to continue. No doubt, also, as the oxygen dissolved in the water is used up, fresh oxygen is absorbed from the air. Besides water plants, minute animals (infusoria, anguillulidæ or water worms, entomostraca or water fleas, &c.) aid the process of purification by feeding on the organic impurities of sewage. These organisms are found in countless numbers in the polluted reaches of rivers. Fish, too, if the pollution is not sufficiently great to cause serious diminution of dissolved oxygen in the water, feed on some of the elements of sewage, and aid in the process of purification; and when the current is sluggish, or in the deep quiet pools of a rapid stream, the suspended matters of the sewage will be largely deposited.

The result of all these processes is that, under certain conditions and within certain limits, streams and rivers which have been polluted are capable of undergoing a certain amount of self-purification by natural means. Under favourable conditions, when the dilution of the sewage with clean water is very considerable and the oxidation and purification exerted by aquatic animal and vegetable life can have free play, a stream or river, especially if it undergoes agitation and exposure to the air by flow-

ing over rapids or by falling over weirs, is capable of being so far purified that, although it may never quite regain its original purity, it becomes at least very much improved.

When the river into which sewage is discharged is already much polluted, or if the dilution is not sufficiently great, oxidation and purification are brought to a standstill. The dissolved oxygen is then greatly diminished in amount; many forms of animal and vegetable aquatic life are injuriously affected or destroyed; decomposition or fermentation of organic matters is started, with the production of foul gases; the bed of the river becomes silted up with decaying matters, which, buoyed up by gases, occasionally rise to the surface and sink again, and a most serious nuisance results. The process is one eventually tending to purification by resolution of complex organic bodies into their simpler elements, but in the meantime the effects of the process are most offensive.

A considerable rise of temperature will produce a like result on rivers which are having their purifying powers tested to the height of their capacity. Purification goes on so long as the weather is cool, but with a rise in temperature, certain forms of bacterial growth are stimulated and decomposition sets in, replacing the oxidizing processes.

Sewage in drinking water is chiefly dangerous from the fact of its being liable to contain the specific poisons of disease. Cholera and enteric fever, diarrhœa and dysentery, we know to be sometimes spread by means of infected and polluted water.

The process of sedimentation which occurs in the deep and sluggish reaches of a river tends to the elimination of bacteria, the suspended matters in their subsidence entangling them and carrying them down.

The result of the Massachusetts experiments on the purification of water by filtration may be briefly summarized as follows:—

(*a*) By reducing the rapidity of filtration, and employing the finer sands, increased efficiency is obtained.

(*b*) With moderate rapidity of filtration (2,000,000 gallons per acre per diem) one foot of sand appears to be as effective as five.

(*c*) The scraping off of the upper layer of clogged sand enables more organisms to pass through the filter; and it is not, as a rule, until three days after scraping that the filters regain their highest efficiency.

(*d*) Fifty-five per cent of the organisms removed were found in the upper quarter inch of sand, and 80 per cent in the upper inch.

(*e*) Much less water at 32° Fahr. passes through a filter than when the water is at 70° Fahr., owing to the increased viscosity of the colder water.

(*f*) Shallow filters require more frequent scraping than the deeper ones, due to the greater head available in the deeper filters.

(*g*) Filters used continuously require less frequent scraping than when used intermittently.

The connection between the cholera outbreak in Hamburg in 1892 and its water supply, and the value of sand filtration are clearly demonstrated by the following facts: Hamburg, Altona, and Wandsbeck, and three towns which are contiguous to each other, and really form a single community, not differing from each other except in so far that each has a separate and different kind of water supply. Wandsbeck obtained filtered water from a lake which is hardly at all exposed to contamination with fæcal matter; Hamburg obtained its water unfiltered from the tidal Elbe above the town; whilst Altona drew its water from the Elbe, but below Hamburg, after the river had received the sewage of 800,000 people. The water so taken, however, was subjected to careful sand filtration, before being supplied to the people of Altona. Whereas Hamburg in 1892 was severely visited by cholera, nearly 17,000 attacks and 8,600 deaths occurring in the autumn of 1892, Wandsbeck and Altona were nearly

free from the disease. About 500 cases of cholera occurred in Altona, but at least 400 of these were infected in Hamburg. The water supplied to Hamburg was taken from the Elbe above the sewage outfalls into the river, but was nevertheless contaminated at times by the tidal action carrying sewage above the outfalls. This water, supplied in an unfiltered condition to the population, was the cause of the cholera epidemic. Careful sand filtration of the Elbe water, in a much more grossly sewage-polluted condition, saved Altona from the disastrous epidemic which raged in Hamburg.

Artesian wells, so called from the province of Artois in France, where they have long been in use, are formed when a boring taps a subterranean reservoir confined in a permeable stratum by impermeable strata above and below, the permeable stratum having its outcrops on the surface at considerably higher levels than the surface of the ground where the boring is sunk. The subterranean reservoir is consequently basin-shaped; and the water, when tapped, at the lower part of the basin, strives to regain its level by flowing up the boring and spouting out at its mouth. The waters which feed these wells often come from a great distance, the outcrops of the permeable strata on each side of the basin being sometimes 60 to 70 miles from the well in a straight line. The best Artesian wells are found in the chalk.

The water supplied by deep wells is generally remarkably free from organic impurities, even when sunk in the midst of large cities. Nitrogen, as nitrates and nitrites, is usually present in deep well waters; the other mineral constituents of the well water depends chiefly on the strata through which the water has percolated, and on the solubility of the component elements of these strata by water charged with carbonic acid.

In the near neighbourhood of the sea there is a danger of the infiltration of sea water into deep wells, especially when sunk in chalk formations. Such infiltration is recognized by an increase in the amount of chlorine in the well water, and is probably due in some cases to excessive pumping causing considerable depression in the water-level of the well. It has happened that the brackishness so caused has rendered a town water supply quite unusable for domestic purposes, and has given rise to diarrhœa and other evidence of gastro-intestinal disturbance among some of those drinking it.

The water supplied to a community must be good in quality and abundant in quantity. Impure waters are liable to cause injury to the health of those who drink them; whilst deficiency of water means want of cleanliness, with its ensuing discomforts and dangers.

Water is required for the following purposes, the undermentioned quantities representing average requirements:—

	Gallons per head daily.
Household—	
Fluids as drink	0·33
Cooking	0·75
Personal ablution	5·00
Utensil and house washing	3·00
Clothes washing (laundry)	3·00
Water closets	5·00
Trade and manufacturing	5·00
Municipal—	
Cleansing streets, public baths and fountains, flushing and cleansing sewers, extinguishing fires	5·00
Total	27·08

The quantities of water given above as required for the household are those which are necessary to maintain a good condition of cleanliness. The five gallons for personal ablutions would allow a daily sponge bath for each person. If each person has also a weekly general bath of from 30 to 40 gallons, five gallons extra per head daily must be added.

In towns, five gallons per head daily is found to be ordinarily sufficient for municipal purposes; and the same amount is required, on the average, for manufacturing and trade purposes. Water is also required for animals—drinking, washing, and cleansing of stables. About 16 gallons daily for each horse, and 10 gallons for every cow, are average requirements.

On the whole, it may be said that not less than 30 gallons per head daily of the population should be supplied to every town. There will always be some waste in households from leaky taps and fittings, and this must be provided for. The greater part of the waste, however, very often takes place from the mains, before the water reaches the consumer. In some towns it has been found that as much as one-half or two-thirds of the total water supply has leaked out of the mains into the soil. The supplies per head in the various towns in this country vary greatly.

The amount of water actually utilized in the houses of a town varies enormously. In the houses of the poor it may be only two or three gallons per head daily; whereas it should amount to at least 15. The adult human being consumes daily about two and one-half pints of water as drink, and about another two pints in his solid food.

Domestic purification.—Distillation effects a more complete purification of water than any other method which is practised. If the first portions of the distillate, containing volatile substances present in the water to be distilled, are rejected, a water free from all foreign ingredients is obtained. Its aeration, however, is deficient; but this aerated quality can easily be furnished by allowing the water to flow out of fine holes in the bottom of a receptacle and to pass through the air in finely divided streams. The distillation of sea water is now largely carried out on board the ships of His Majesty's navy and in the large steamships of the mercantile services. As long as there is fuel on board, a most wholesome water can be obtained. Distilled water acts very readily on metals such as copper, zinc, iron and lead; so it is important that the several parts of the distillation or condensing apparatus should not expose these metals to the action of the water. Silver-lined or block-tin vessels and pipes may be used.

By boiling water, carbonic acid is driven off with other volatile gases dissolved in the water, and chalk (temporary hardness) is deposited at the bottom of the vessel. The water is therefore softened. We have the strongest reason for believing that distillation and boiling—raising the temperature of the water to 212° Fahr.—render innocuous all organized living matter in the water. There can be little doubt but that the germs of cholera, enteric fever, and of other diseases, occasionally propagated by means of impure drinking water, are effectually destroyed by even a few minutes' boiling. The spores that resist the temperature of boiling water are, seemingly, not disease germs, but merely the immature forms of harmless species; for experience has shown that water, and other fluids mixed with water, such as milk, in which the existence of germs capable of producing enteric fever, cholera, scarlet fever, or diphtheria, was almost undoubted, have been rendered harmless by a few minutes' boiling.

Boiled water is flat and insipid, and should be aerated before being drunk.

Various schemes have been suggested for purifying water by chemical means. Schumberg's bromine process consists in adding 0·066 grain of free bromine, dissolved in potassium bromide, to every litre of water, and then after five minutes removing the excess of bromine and making palatable by sodium sulphite and carbonate. The addition of calcium hypochlorite, of euchlorine, and of potassium perman-

ganate, have been suggested by other authorities, but have been little employed. Recently the use of acid sodium bisulphate has been recommended by Parkes and Rideal in the proportion of one gramme of the salt to a pint of water, experiment having shown that in this strength, if contact is permitted for 15 minutes, bacillus typhosus infection in broth-culture medium is destroyed.

Alum is sometimes employed as a purifying agent. It is much used in China, where the turbid waters of the large rivers are extensively drunk after the addition of a little alum. When added to water containing chalk in solution, it forms a bulky precipitate of aluminium hydrate, which falls to the bottom, carrying with it suspended and floating matters. It has little or no effect on organic matters in solution in the water. About six grains of alum to the gallon of water is the proportion generally required.

Filters.—Domestic filters are probably more often a source of pollution of the water than otherwise. It is usually considered that a filter requires no attention; it is consequently but rarely cleaned; the filtering material is seldom renewed, and its pores becomes clogged with putrescible organic matters, which form a suitable nidus for the growth and development of living organisms which contaminate the filtered water. It is not unusual, under such circumstances, to find a considerably larger proportion of organic matter in the filtered water than was present before filtration.

This is especially the case when animal charcoal is used as the filtering material. This substance is prepared by calcining crushed bones in closed vessels; it is extremely porous, and exerts considerable oxidizing action on dissolved organic matters in water, and bleaches colouring matters in solution. These properties, however, are evanescent, and rapidly disappear if the charcoal is not cleaned or renewed, especially if the water filtered through it is somewhat impure. Not only this, but the charcoal yields to water phosphate of lime, of which it is largely composed. The phosphate favours the growth of living orgauisms, so that water must neither be kept too long in the filter, nor should it be stored for use after filtration. Animal charcoal does not prevent the passage of living disease germs through its substance. For these reasons filters composed of animal charcoal, whether in loose fragments or in compressed blocks, are not at all suited for domestic use. They require more care and attention than any domestic filter is likely to meet with. Charcoal block filters have the power of removing lead from water if their surfaces are kept constantly clean by frequent scrubbings; this is probably due to the lead forming a phosphate in the filter.

With regard to filters of the kind which affords no protection against the infection of water-borne disease, Drs. Woodhead and Wood point out that they may materially increase the risk to the consumer of acquiring such inefective diseases, inasmuch as the specific organisms of these diseases become arrested in the filtering materials, and may then be washed through in great numbers into the filtered water for many days subsequent to the introduction of infected water into the filter. If, for instance, the water supply of a house received a chance contamination, which rendered it dangerous for one day only, the consumption of the water involves the risk of specific infection on that day only; but should the polluted water be passed through a domestic filter of the kind indicated, the arrest of the specific microbes in the filter, and their subsequent passage into the filtrate, would render the water passed through the filter liable to convey infection for several days after the initial introduction of the pollution. The consequent multiplication of the opportunities of infection necessarily greatly increases the risk of such an occurrence. The wrong and misleading statements set forth so prominently by the makers of such filters, as to their capacity to render any water, however polluted, harmless and innocuous, give rise to a false sense of security in the minds of the public, and are an evil which should be strenuously combated.

In the Pasteur-Chamberland filter the water, under pressure, is passed through hollow cylinders of a specially prepared form of porous porcelain. The filtered water is entirely free from all suspended matters, including all kinds of organisms and their spores. The water is therefore sterilized; but, the filter acting merely mechanically, there is no alteration in the chemical composition of the dissolved constituents of the water. This filter is employed to sterilize pure waters for laboratory purposes, and may with advantage be so used for domestic purposes. The bottom of the filter is connected with a main under pressure, the water issuing from the top. These filters require periodical cleaning at short intervals by a hard brush, to remove slimy deposits on the surface of the porcelain; if this is not done, the delivery of water becomes very much reduced, and separated organisms may in time grow through the cylinders.

The experiments conducted by Dr. Horrocks at Netley in 1901 show (1) that typhoid bacilli are not able to grow through the walls of the Pasteur-Chamberland candle ; and the filter ought to give complete protection from water-borne enteric fever.

Sometimes the only water available for drinking, in addition to the risk of its being specifically infected, also contains much suspended matter. It is useless to attempt to filter such a water through porcelain, as the filtering material soon becomes clogged. The Brownlow germ filter, in which the water is first passed through charcoal, and then through porous porcelain, is specially advantageous in such cases; or the porcelain may be covered with a strainer of fine linen cloth, which can easily be renewed.

From what has already been said, it will be seen that the essentials of a good filter are: that every part should be easily accessible for cleansing purposes; that there should be nothing in the construction of the filter which is capable of yielding metallic or other impurities to the water; that the filtering medium should be efficient for the work in hand, and its purifying power reasonably lasting; and that the delivery of filtered water should be reasonably rapid.

In houses supplied by a constant service, it is a good plan to obtain a direct supply for drinking purposes from a draw-off tap fixed on the service pipe on its way to the cistern.

Bibliography.—In preparing these notes, free use has been made of Moore's 'Sanitary Engineering,' and Parkes' 'Hygiene and Public Health.'

Special inspection for smallpox.—At the date of the last annual report, vessels from Newfoundland were being inspected at our Atlantic ports in view of the prevalence of smallpox in the island. The outbreak having died down, Newfoundland was again excepted from the regulations by you under section 7 on April 20 last.

On February 23 last quarantine inspection was ordered by you at the Prince Edward Island ports of Charlottetown and Georgetown, on account of smallpox in Nova Scotia. This inspection is still in force.

On account of smallpox in Minnesota, quarantine inspection was instituted by you at Fort Frances and Rainy River, in Ontario, on the 11th of this month. This is still in force.

The presence of smallpox in Montana and North Dakota has been reported. The question is now under your consideration of the advisability of your instituting quarantine inspection at the frontier port of North Portal, Saskatchewan, of the land-seekers and settlers who are swarming into Canada at that place.

Official inspections and visits.—On June 22 last I attended and by request read a paper at the Quinquennial Congress of the International Council of Women meeting at Toronto.

On June 25 I left for the Atlantic coast, and inspected the Leper Lazaretto at Tracadie, N.B., and the quarantine stations of Chatham and St. John, N.B., Halifax, Sydney, and Louisburg, N.S., Charlottetown, P.E.I., the quarantine building at Pictou, N.S., and the quarantine station at Grosse Isle, Que., in the River St. Lawrence.

On July 24 I left for British Columbia. I inspected at Vancouver and William Head, Victoria; went up to Prince Rupert, and with Dr. Watt, the Superintendent of British Columbia Quarantines, and Dr. Tremayne, the local quarantine officer at Prince Rupert, finally selected a site for the new station, which was subsequently approved by you.

I also visited Seattle, Wash., to confer with the federal, state and municipal health officers there as to the status of that city and district with regard to the Bubonic plague, and the observance of the precautions to prevent our importation of Seattle rats by the shipping.

On my journey I stayed over in Winnipeg and attended the annual meeting of the Canadian Medical Association.

On October 16 I went to Richmond, Va., and attended there the annual meeting of the American Public Health Association, with other delegates from the four countries of which the association is formed, the United States, Canada, Mexico and Cuba.

STATIONS.

Grosse Isle, Que.—Vessels inspected, 393; being 364 at Grosse Isle and 29 at its sub-station at Rimouski. Persons inspected, 120,226. Infectious disease was reported or discovered on 66 vessels. The admissions to hospital were 505. The diseases were smallpox, scarlet fever, erysipelas, and enteric fever. The deaths numbered 11: one from intestinal tuberculosis, one from rachitis, one from chicken-pox, one from convulsions, complicating measles, one from smallpox, and two from scarlet fever.

This season has witnessed the unveiling of the monument on Telegraph hill, overlooking the fairway to the memory of the '5,425 persons who, flying from pestilence and famine in Ireland in the year 1847, found in America but a grave.' They are buried in a valley at the foot of the hill on which this new monument is erected.

A new inspecting steamer is being supplied.

Rimouski, Que.—Advance sub-station of Grosse Isle.

Halifax, N.S.—Vessels inspected, 298; persons inspected, 80,917; vessels arriving with infectious disease, 17; diseases: smallpox, measles, diphtheria and chickenpox. Admissions to hospital, 49. The contract has been awarded for a new quarantine steamer for this station.

St. John, N.B.—Vessels inspected, 168; persons inspected, 19,604. Vessels arriving with infectious disease, 6; admissions to hospital, 13; diseases: scarlet fever and measles.

Sydney, N.S.—Vessels inspected, 161. None of the graver forms of quarantinable diseases occurred.

Louisburg, N.S.—Vessels inspected, 30. No quarantinable disease.

Chatham, N.B.—Vessels inspected, 37. No quarantinable disease.

Charlottetown, P.E.I.—Vessels inspected, 11, from over seas. All incoming steamers from the mainland were also inspected after February 23 on account of smallpox in Nova Scotia.

William Head, B.C.—Vessels inspected, 150. The numbers of crews numbered 12,911; cabin passengers, 5,700; and steerage passengers, 10,866. Of these there were

5,032 Chinese in the crews and 8,411 in the steerages; Japanese numbered 1,630 in the crews and 753 Japanese were in the steerages. There were only 26 Hindus. Diseases reported or discovered: smallpox, dysentry, chicken-pox, enteric fever, measles, and beri-beri. One death from dysentry.

Victoria, B.C.—Vessels inspected, foreign, 3. Precautions are still being taken to prevent rats landing from any ship touching here.

Vancouver, B.C.—Vessels inspected, 2. No disease.

Prince Rupert, B.C.—Vessels inspected, 2. No disease. Owing to the plague-infected rats being still found in Seattle, the regulations regarding landing of vessels from that port are enforced. A launch is being supplied this station.

Tracadie Leper Lazaretto, N.B.—Three new cases admitted during the year, all from neighbouring districts. Number of patients, 20. No death has occurred during the year.

Darcy Island Leper Lazaretto, B.C.—No admissions have been made during this year.

Public Works Health Act.—Inspector C. A. L. Fisher reports for the territory from Winnipeg, Manitoba, east to the Atlantic ocean that he is pleased to be able to report again that in his several tours of inspection of the public works of the Dominion under construction in his district for the past year, he has found the medical service given to be complete and the sleeping quarters and boarding of the men to be fully equal to the very good conditions in that way reported last year.

Dr. A. E. Clendenan, appointed by you inspector of the territory from Winnipeg, Manitoba, to the Pacific ocean, in place of Dr. Chamberlain, resigned, reports that hospitals have in nearly all cases been provided as required, and in the one or two cases where the service was not up to the mark an intimation of the fact was followed by improvement. A good class of medical men is found everywhere in the railway service, and contractors recognize that there is more money to be made by giving good service and getting the cases promptly attended to. No complaints were made to him by employees.

I have the honour to be, sir,
Your obedient servant,

F. MONTIZAMBERT, M.D.,
Director-General of Public Health.

The Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 2.

(G. E. Martineau, M.D.)

Grosse Isle, Quebec, March 31, 1910.

Sir,—I have the honour to submit this my annual report of the St. Lawrence Quarantine Service for the year ending March 31, 1910.

There were 364 vessels examined at this station during the year, being an increase of nine as compared with last season. Of these, only five were sailing vessels, 170 vessels carried passengers.

The total number of persons inspected was 120,226, being an increase of 40,963, as compared with last year.

During one season only, has this total been exceeded—in 1907.

They were divided among the different classes of passengers as follows: 1st cabin, 5,497; 2nd cabin, 23,905; steerage, 54,568; cattlemen, 1,316; crews, 34,866; stowaways, 74.

Infectious disease was discovered or reported on sixty-six different occasions and on every passenger boat arriving here.

The diseases so discovered or reported were: smallpox, scarlet fever, measles, diphtheria, varicella, parotiditis, rubeola, erysipelas and typhoid fever.

On one occasion only, was it necessary to land passengers for refusing to be vaccinated, from the SS. *Grampian,* on June 8, when a party of six were landed for the usual period of observation, although on several other occasions it was necessary to vaccinate parties who would not allow the ship's surgeon to do so.

Deaths during the voyage were reported on fourteen different occasions, these being due to: Convulsions, 1; broncho-pneumonia, 1; measles, 1; heart failure, 2; angina pectoris, 1; debility, 1; cholera infantum, 1; peritonitis, 1; delimium tremens, 1; alcoholic poisoning, 1; lost overboard, 3.

Births were reported on ten occasions: 5 males and 5 females.

Smallpox: On three different occasions, we had to deal with steamers having cases of smallpox on board.

SS. *Virginian,* Capt. Vipond, sailing from Liverpool on May 28 with 76 cabin passengers, 201 intermediate, 547 steerage, and 294 crews, arrived at station June 5 with a case of smallpox on board.

This case having developed among the steerage passengers, occupying forward compartment of the vessel, we landed only those who had had communication with these, 271 passengers and 27 stewards, and the vessel, having been thoroughly disinfected and all the passengers vaccinated, proceeded after a detention of twelve hours at the station.

Three new cases of smallpox developed among the passengers detained under observation: One on the 15th, another one on the 16th, and the third one on June 17. These three passengers who contracted the disease after landing at station, were occupying on board the vessel the cabins next to the one occupied by the first case landed.

All the passengers who had had no communication with these last cases of small pox were released after the expiration of the eighteen days of observation, on June 23. There were 117 passengers and 10 members of the crew.

On June 25, a letter received from the department, authorized me to release, from among the passengers having had communication with the last cases of smallpox, those who had successfully been vaccinated at quarantine. Acting under that authority, 110 passengers more were released. No other cases having developed among the rest of passenegrs detained (44), they were released on July 8.

SS. *Virginian,* Capt. Vipond, sailing from Liverpool on October 15 with 76 cabin, 187 intermediate, 425 steerage passengers, and 263 crew, arrived at station on October 23 with a case of smallpox on board.

We acted in this instance as we had done on the same occasion before, landing only those who had had communication with the case of smallpox, 168 steerage passengers and 13 members of the crew, and the vessel having been thoroughly disinfected, and all the passengers on board vaccinated, were released after a detention of twenty-five hours at the station.

One of the children, belonging to the family amongst whom the smallpox had broken out, developed the disease after the landing at station. Also one of the members of the crew (a stoker), who was suffering from mumps and isolated on board the steamer in the hospital next to the one occupied by the case of smallpox, developed the disease the day following his arrival at station.

No other case having occurred among the passengers, &c., detained under observation, they were released on November 12.

SS. *Dominion,* Capt. Mendus, sailing from Liverpool on November 4 with 150 intermediate, 292 steerage passengers, 8 cattlemen, arrived at station on November 14.

No case of infectious disease was reported by the ship's captain and surgeon, and nothing suspicious was discovered by the medical assistant who made, as usual, a careful examination of all the steerage passengers on board.

Nevertheless, when the American Immigration officials made the inspection of the steerage passengers at Quebec, they discovered a very suspicious case of smallpox. This case was, by the minister's instructions, taken back to station with all the exposed steerage passengers for treatment. The steamer, having been thoroughly disinfected and all the passengers on board vaccinated, proceeded after a detention of about twenty-four hours.

In connection with that matter, I may perhaps be permitted to say here, that it was impossible for our inspecting officer to discover that suspicious case, as there was no rash on the forehead nor on the wrists, contrary to what happens generally.

No case of contagious diseases having occurred among the 55 steerage passengers detained under observation, they were, by special authority of the department, released on November 29.

All the suspicious rash having disappeared, the patient was discharged from the hospital at quarantine on December 16.

This year has been a very busy one in every respect at this station. There were 505 people admitted at the hospital, and we had constantly to treat a number varying from 20 to 50 persons at the time, suffering from different diseases; many of them being very serious cases, and this from the opening of the station on April 29, to its close, and this year the station was closed on December 16, about one month later than usual.

Deaths numbered 11: One from intestinal tuberculosis, one from rachitism, one from chicken-pox, two from typhoid fever, one from general debility, one from convulsions complicating measles, one from diphtheria complicating measles, one from smallpox and two from scarlet fever.

Quarantine staff.—Dr. E. Belisle continued to be in charge of the Rimouski substation.

A great celebration has taken place at this station during this season, that is the unveiling of the monument dedicated to the Irish immigrants who perished victims

of the fever in 1847-48. This monument has been erected on the place named 'Telegraph hill,' the most elevated point on the island, where it occupies a site of 150 feet square. This celebration was under the auspices of the society called 'Ancient Order of Hibernians,' and I may perhaps be permitted to add that it was a brilliant and impressing event; 3,000 people coming down with five boats to assist at it.

We had also the pleasure and honour of your visit at the station during the season, and after your careful and minitious inspection through the different buildings, &c., you found it necessary to have many improvements and works carried out in the interest of quarantine and of public health.

We had also the visit of the medical professors and students of Montreal and Quebec Universities.

The immigration officers, the agents of the different companies carrying passengers, as well as some gentlemen connected with the immigrant passengers, and the shipping federation paid also a visit at the station.

Improvements.—The installation of the apparatus to filter the water, taken from the river and distributed to the hospital and to the other buildings at the station, may be regarded as one of the most important improvements carried out this year. The erection of a new school house has also been commenced, and no doubt will be completed next season.

Requirements.—On the occasion of your visit at the station you had the opportunity to convince yourself of the necessity and urgency of having a deep-water wharf, also of having a new detention building erected for the accommodation of the second cabin passengers, and I have every reason to believe that these improvements will be carried out next season.

Old Str. *Challenger,* which has been condemned three years ago, will no doubt also be replaced by a more modern and better equipped vessel.

The old wooden sheds which date from 1832 and 1848, should be replaced by a more modern building and appliances.

Three new buildings are also required. One to be used as quarters by captain and chief engineer, one for a laboratory, and the other one for a store for the provisions, beddings, &c., used at the hospital.

There are still some other works and repairs absolutely necessary, the list of which has been forwarded to the department.

All of which is respectfully submitted.

I have the honour to be, sir,
Your obedient servant,

G. E. MARTINEAU, M.D.,
Medical Superintendent of St. Lawrence Quarantine Service.

The Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 3.

(Ernest Belisle, M.D.)

Rimouski Quarantine Sub-station, April 2, 1910.

Sir,—I have the honour to submit to you my annual report for the year ending March 31, 1910.

Twenty-nine vessels were inspected at this station during the season.

Infectious diseases were reported on the following vessels calling here to land English mails: On June 4, SS. *Virginian* had to continue to Grosse Isle on account of one case of smallpox; June 11, *Empress of Britain,* one case of measles; July 9, *Empress of Britain,* one case of measles; July 22, *Empress of Ireland,* one case of varicella; July 29, *Virginian,* one case of measles; August 19, *Empress of Ireland,* two cases of measles, one case of varicella; September 16, *Empress of Ireland,* three cases of measles; October 14, *Empress of Ireland,* one case enteric fever; October 22, *Virginian,* one case mumps, two cases smallpox; November 12, *Corsican,* two cases of measles, one case of scarlatina.

On 29 vessels examined here, 10 had to stop at Grosse Isle to land infectious cases.

I have the honour to be, sir,
Your obedient servant,

ERNEST BELISLE, M.D.,
Quarantine Officer.

The Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 4.

(N. E. MacKay, M.D., M.R.C.S.)

Halifax, N.S., April 23, 1910.

Sir,—I have the honour to submit my annual report for the year ended March 31, 1910.

During the year just ended we inspected at this station 298 vessels. This is six in excess of the number inspected during the preceding year.

In the same period we inspected 80,917 persons, classified as follows: Cabin, 2,101; second-class, 11,650; steerage, 45,576; cattlemen, 54; and crew, 21,436. This is 22,899 more than that inspected during the year ended March 31, 1909.

The work at this station was uneventful during the present year. One case of smallpox was found on the immigrant ship *Raglan Castle* from Rotterdam, on June

19, 1909. The case was a mild one, and as the man was booked for New York, and was quite comfortable we allowed him to proceed to port of destination and notified New York authorities by telegram.

One of the minor quarantinable diseases was discovered, or occurred on board the following ships: SS. *Virginian,* April 9, 1909; one chicken-pox; SS. *Hesperian,* April 18, one case of diphtheria; SS. *Germania,* June 1, three cases of mumps; SS. *Siberian,* June 20, three cases of measles; SS. *Carthaginian,* July 31, one case of mumps; SS. *Carthaginian,* October 24, one case of measles; SS. *Canada,* November, 26, twenty cases of measles; SS. *Hesperian,* December 11, two cases of measles and one of chicken-pox; SS. *Sicilian Prince,* December 17, nine cases of measles and one of chickenpox, booked for New York; SS. *Southwark,* December 19, two cases of measles; SS. *Ionian,* December 26, one case of measles; SS. *Uranium,* January 8, 1910, one case of measles; SS. *Empress of Ireland,* February 18, two cases of measles, booked for St. John, N.B.; SS. *Uranium,* February 27, nine cases of measles and one of chicken-pox, booked for New York; SS. *Hesperian,* March 5, one case of measles, and one of diphtheria (convalescent), booked for St. John, N.B.; SS. *Tunisian,* March 18, one case of measles and one of mumps, booked for St. John, N.B.

Diseases other than quarantinable occurred on the following vessels: SS. *Victorian,* April 23, 1909, one case of pneumonia; SS. *Volturno,* September 30, one case of pleuro-pneumonia; SS. *Southwark,* December 19, one case of apoplexy, one of accident; SS. *Napolitan Prince,* January 20, 1910, one case of pneumonia; SS. *Uranium,* February 27, one case of rheumatism; SS. *Campania,* March 5, one case of eclampsia and one of pneumonia; SS. *Grampian,* March 30, one case of pleurisy; SS. *Parisian,* March 22, one case of pneumonia; SS. *Virginian,* March 24, one case of tonsilitis.

Death occurred on board the following vessels: SS. *Victorian,* April 23, 1909, from pneumonia; SS. *Volturno,* September 30, from pleuro-pneumonia; SS. *Volturno,* October 24, from sea-sickness;; SS. *Uranium,* November 26, from suffocation (overlaid by mother, baby 11 months old); SS. *Southwark,* December 19, one from apoplexy and one from accident; SS. *Sicilian,* January 17, 1910, from sea-sickness (woman pregnant six months); SS. *Napolitan Prince,* January 20, one from pneumonia; SS. *Corsican,* February 27, steerage passenger jumped overboard; SS. *Empress of Ireland,* March 4, one from accident; SS. *Hesperian,* March 5, one from sea-sickness; barque *Fanny Bresland,* February 21, one from accident (fell from aloft); SS. *Parisian,* March 22, one from pneumonia; SS. *Grampian,* March 24, one killed (accident).

Nearly every immigrant vessel arriving, from Great Britain especially, has had a few ardent anti-vaccinationists on board, but all these have, thus far, after a good deal of persuasion submitted to the operation. I may here observe that the officials of these ships should exercise greater effort to persuade such immigrants to get vaccinated before they arrive in port, and so save time and trouble. Then, again, emigration agents on the other side should be very careful not to mislead intending immigrants about the Canadian law with respect to vaccination.

The wharf at the station has been undergoing extensive repairs, and when this is finished coal sheds should be constructed on the wharf. They are much needed.

The new quarantine boat which is in course of construction is expected to be finished and delivered here towards the last of June. During the past two years we have felt the great needs of a boat of our own. Her arrival will be hailed with delight.

A resident carpenter at the station is much needed. There is plenty of work for a carpenter to do, looking after the fences and keeping the buildings in thorough repair.

Forty-nine patients were treated at the station hospital. We had there eleven cases of measles, two of diphtheria, one of chicken-pox, one of pneumonia, and one of pleurisy. The remainder of the forty-nine were members of the families to which the sick belonged.

I have the honour to be, sir,
Your obedient servant,

N. E. MACKAY, M.R.C.S.,
Quarantine Officer.

The Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 5.

(R. C. Ruddick, M.D.)

St. John, N.B., March 31, 1910.

Sir,—I have the honour to submit my report for the year ended to-day, March 31, 1910.

Number of vessels inspected, 168; number of persons inspected, 19,604. Classified as follows: Cabin, 408; intermediate, 1,961; steerage, 9,243; crew, 7,725; cattlemen, 242; stowaways, 25.

No vessels arrived with any of the graver quarantinable diseases.

Of the vessels arriving with the minor quarantinable diseases, the SS. *Salacia* arrived on November 23, 1909, with one case of measles; the SS. *Montrose* arrived on November 30, 1909, with one case of scarlet fever; the SS. *Mount Temple,* on December 28, 1909; with four cases of measles; the SS. *Empress of Ireland,* on February 19, 1909; with one case of measles; the SS. *Montreal,* on March 10, with two cases of measles; the SS. *Tunisian,* on March 19, with three cases of measles and one of mumps.

All made a good recovery and at the present time our hospital and detention buildings are empty. One steerage passenger was detained for refusal of vaccination.

Two deaths were reported to me on May 31, 1909, occurring on the bark *Alfheim,* from Rosario, S.A., to this port. From what I could learn from the captain they died from typhoid fever. One death on the SS. *Manchester Commerce* from accident reported to me on her arrival at this port, September 20, 1909, and one death reported on the SS. *Lake Michigan,* that of a child, from convulsions, on December 10, 1909.

Our water service on this station is very unsatisfactory owing to a very severe cold snap on March 3, 1907. The water-pipe crossing the channel froze and broke, and since then constant repairs have been going on, but it is no better than when they first began. We get a two-hour run of water three times per week, which is not sufficient, especially when we have people in the hospital and detention buildings. In case of fire, I am afraid our buildings would be destroyed. We are well equipped with inside and outside hose to fight fire, but by the time we could telephone the city officials to have the water turned on so as to give us a good pressure, everything would be gone. I would strongly recommend the laying of a new pipe. A smaller pipe than what we have would be better for the conditions of our harbour tides and currents.

I am very much pleased with our new quarantine boat, and with some finishing which she requires she will prove highly satisfactory for our work.

Our new wharf has not been started yet, but am informed that work will be started in a short time. We want a new disinfector and building very much, and hope to see the same on our new wharf at an early date.

We are also in much need of two cottages for our help, as two of our officials are housed in the detention buildings.

I have the honour to be, sir,
Your obedient servant,

R. C. RUDDICK, M.D.,
Quarantine Officer.

The Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 6.

(H. Rindress, M.D.)

North Sydney, N.S., March 31, 1910.

Sir,—I have the honour to submit my report for the year ending March 31, 1910.

The total number of vessels inspected during this period was 161. Of this number 140 were steamships and 21 sailing vessels. No grave quarantinable disease was found on any of the vessels inspected.

The milder infectious diseases found were mentioned in my weekly reports.

The year has been an uneventful one.

I have the honour to be, sir,
Your obedient servant,

HORACE RINDRESS, M.D.,
Quarantine Officer.

The Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 7.

(Freeman O'Neil, M.D.)

Louisburg, C.B., March 31, 1910.

Sir,—I have the honour to submit my annual report for this quarantine station, for the year ending March 31, 1910.

There were 30 vessels inspected with a total number of 816 men. No quarantinable disease was brought to this port during the year. Owing to the exceptionally mild winter fewer foreign vessels are calling at this port than usual.

The necessity for some permanent arrangement in regard to a boat for boarding vessels was particularly shown last February and March; when the drift ice was on the coast, during this period I had considerable trouble to get W. W. Lewis, the owner of the steamer used in boarding, to allow the use of his boat.

I have the honour to be, sir,
Your obedient servant,

FREEMAN O'NEIL, M.D.,
Quarantine Officer.

The Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 8.

(J. Baxter, M.D.)

Chatham, N.B., March 31, 1910.

Sir,—The end of the year having arrived, I beg leave to report for the season past.

Quite a number of improvements have been effected such as installing a motor engine in the row boat, fitting up a small office on the island, shingling house and kitchen, &c. We had an exceedingly high tide, with easterly storm, that raised the water so high that it went right over the island in some parts, and up to the keeper's house. It carried off the top of landing stage, but this was captured by boat and can be replaced. The high tide of December 26 shoved the ice below the island *en bloc*, and pushed over the outer abutment, but this settled again into place without apparent damage.

Number of vessels inspected, 37, viz.: 24 steamships, 10 barks, 2 barquentines, and 1 three-masted schooner. Number of men examined, 743. No quarantinable disease.

I have the honour to be, sir,
Your obedient servant,

J. BAXTER, M.D.,
Quarantine Officer.

To the Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 9

(Peter Conroy, M.D.)

Charlottetown, P.E.I., March 31, 1910.

Sir,—I have the honour to submit my report for the year ending March 31, 1910.

No disease of a contagious character was brought to this port during the past year.

There were eleven inspections of vessels from beyond the seas.

On February 23 an order was received from the minister through the Director-General of Public Health, authorizing me to inspect the incoming winter steamers, with a special view to the presence of smallpox.

This inspection has been regularly carried out and is still being continued, together with the vaccination of the unprotected.

Owing to the mildness of the season, and the increased efficiency of our means of communication, navigation at this port during the past winter has been practically as free as in summer.

A telephone has been lately installed at the hospital, which will prove a great convenience in time of need.

I have the honour to be, sir,
Your obedient servant,

PETER CONROY, M.D.,
Inspecting Physician.

The Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No 10.

(A. T. WATT, M.D.)

VICTORIA, B.C., March 31, 1910.

SIR,—I have the honour to submit this my report of transactions at William Head quarantine station, for the twelve months ending March 31, 1910.

During the twelve months there were 150 vessels inspected. The members of crews numbered 12,911, cabin passengers, 5,700, and steerage passengers, 10,866. Of these there were 5,032 Chinese in the crews and 8,411 in steerage. Japanese members of crew numbered 1,630, and 753 Japanese were in steerage. There were but 26 Hindus. These numbers for steerage include passengers bound for other countries as well as Canada. Owing to the restrictions on incoming Asiatics, the number of new arrivals has decreased greatly as compared with numbers arriving in other years. And it may be said that the lesser number of such passengers must be a factor in lessening the chances of infectious diseases being brought in. And as a matter of fact, none of the graver quarantinable diseases have been found amongst the steerage passengers for over two years, which corresponds with the time when the Asiatic immigration began falling off.

There has been one smallpox case found during the last year, but the patient was a saloon passenger on SS. *Monteagle.*. This case is now in hospital, as also another case which developed amongst the passengers of this vessel while quarantined here.

Other diseases admitted to the hospitals have been one case of dysentery, and four cases of chicken-pox. The patient with dysentery died shortly after admission. Other diseases found on vessels were cases of typhoid, measles and beri-beri, but they were either convalescent or were properly cared for on board and so were not removed to the hospital here.

There were three steamers concerning which special mention might be made. The first was the SS. *Makura,* which arrived February 10, and with which there was a question of diagnosis between smallpox and chicken-pox. Two children had been taken ill about twelve days previously, and the ship's surgeon had given his opinion that the cases were smallpox and had so declared the cases on arrival at Honolulu. This diagnosis was apparently accepted, as about sixty persons were taken off and quarantined. When the steamer reached William Head the cases were convalescent, but every indication showed that the disease had been chicken-pox and not smallpox.

The history of the cases and the distribution of the eruption was that of chicken-pox. The children were of same family and aged two and three years. When a few weeks old, they had been successfully vaccinated and each showed good marks. Such being the case, it would be exceptioual to find a child suffering from smallpox, but to find two cases, side by side, would seem out of the question and would certainly tell against a diagnosis of smallpox. After full consideration of these facts, and after Dr. Walker having arrived at a like conclusion, we pronounced the cases chicken-pox and gave pratique to the steamer after the two children had been landed.

On March 11 the SS. *Monteagle* arrived, having one of the saloon passengers in hospital with smallpox. This gentleman, a clergyman 78 years of age, had been travelling around the world, but had not been vaccinated for thirty-five years. He had gone into the interior of North China where the disease is now prevalent. His case was quite severe but he made a good convalescence. Another clergyman, who had never been previously successfully vaccinated, came down with the disease when quarantined at the station. This gentleman had been in close contact with the first case two weeks previously. He was vaccinated on board immediately on the disease being recognized and the vaccination proved successful. He was quite ill from the vaccination, and following immediately, the initial symptoms of smallpox were quite marked but the development of the rash was almost entirely aborted. The steamer was disinfected and proceeded to Vancouver with part of crew who had some short time previously been successfully vaccinated or had had smallpox. The rest of the crew and passengers were detained for the usual quarantine period, but no cases occurred other than the one above noted.

The SS. *Titan,* arriving March 21, reported that amongst nine hundred and fifty-two pilgrims carried from Jedah to Singapore, there had been twenty cases of smallpox with six deaths. There had been also twelve deaths from non-infectious diseases. The vessels had been disinfected at Singapore and all the crew vaccinated. No cases occurred amongst the crew.

Plague in Hong Kong has been very much less than in former years. In Japan, there have been scattered cases in different seaports. In California during past twelve months there has only been one known case, but the infection still exists to some extent amongst rats and has also been found amongst ground squirrels in various counties. In Seattle, Washington, an infected rat has recently been found after an interval of eighteen months, so that infection amongst the rats in that city must be considered still existant. Vessels plying between Seattle and British Columbia have been required to take precautions to prevent rats coming on board in Seattle or leaving vessel in British Columbia ports.

Visits have been made to Seattle in connection with the carrying out of these precautions, and also in the company of Dr. F. Montizambert, Director-General of Public Health, a journey was made to Prince Rupert in connection with the final selection of the site for the quarantine station and to confer with Dr. H. E. Tremayne, of Prince Rupert, who had previously been appointed quarantine officer, his appointment being made February, 1909.

On July 1, Dr. A. E. McMicking, who had been acting as assistant medical officer at William Head, resigned on the position being permanently filled by the appointment of W. P. Walker, M.B., M.R.C.S., D.P.H. Dr. Walker is a bacteriologist of experience and has the laboratory here in readiness and in order for such diagnostic work as may be required.

The repairs and improvements at the station have been mostly in continuation of such as were under way when last report was made. The new steam sterilizer and the new sulphur dioxide furnace are now both in running order and both satisfactory. Some further painting has been done. The wharf has been kept in repair, and some work done on boat-house and to roads and water service. Considerable repairs and improvements in the plumbing in various buildings have also been undertaken.

Specifications for a 50-foot launch for the work in connection with Prince Rupert quarantine have been gotten out, and work on the building of the launch should shortly be under way.

William Head station was inspected by yourself during the summer of 1909, and it was a great satisfaction to hear that the works undertaken since your last visit and the general appearance of the station met with your approval.

The Darcy Island Lazaretto has been kept in readiness for any lepers who might be found, but no cases have been sent there during the past twelve months. A number of improvements have been completed by the guardian of the lazaretto, among these being a boat-house and slip, a workshop and a woodshed and cellar. A small gasoline launch has been purchased and is now kept at Darcy island.

I have the honour to be, sir,
Your obedient servant,

A. T. WATT, M.D.,
Superintendent British Columbia Quarantines.

The Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 11.

(R. L. Fraser, M.D.)

Victoria, B.C., March 31, 1910.

Sir,—I have the honour to submit my annual report. Coasting vessels were exempt from inspection during the year. Precautions are still being taken to prevent rats landing from any ships touching here. I inspected three foreign vessels during Mr. Watt's absence from William Head on public health work. No contagious disease was found on them.

I have the honour to be, sir,
Your obedient servant,

R. L. FRASER, M.D.,
Quarantine Officer.

To the Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 12.

(L. N. Mackechnie, M.D.)

Vancouver, B.C., March 31, 1910.

Sir,—I have the honour to report that two vessels have been inspected by me and that no case of contagious or infectious disease has been found during the past year.

I have the honour to be, sir,
Your obedient servant,

L. N. MACKECHNIE, M.D.,
Quarantine Officer.

To the Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 13.

(H. Ernest Tremayne, M.D.)

Prince Rupert, B.C., April 2, 1910.

Sir,—I have the honour to submit my report for the year ending March 31, 1910.

No quarantinable disease of any kind was brought to this port during the above period.

Two vessels reported deaths during the voyage.

SS. *Hercules* had a Chinese fireman die from some bowel trouble shortly after leaving Sydney, C.B.

SS. *Crown of Galicia* had a Chinese fireman commit suicide.

Owing to the plague infected rats being still found in Seattle, the regulations regarding landing of vessels from that port are enforced.

I have the honour to be, sir,
Your obedient servant,

H. ERNEST TREMAYNE, M.D.,
Quarantine Officer.

The Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 14.

(J. A. Langis, M.D.)

Tracadie, N.B., March 31, 1910.

Sir,—I have the honour to submit this, my report as medical superintendent of the Tracadie Lazaretto, for the twelve months ending on this date.

There are in the lazaretto twenty patients, eleven males and nine females; the youngest eight and the oldest seventy-eight years o fage. Of these, fifteen are of French, two of English, two of Icelandic, and one of Russian origin.

Classifying in what stage of the disease these patients are is, to my knowledge of its course, not very easy, as they are often ill-defined. To-day we may represent the number in the first state of leprosy to be six, ten in the second and four in the third. One died, May last, from congestion of the lungs.

Two patients left the lazaretto in June last, one of whom returned lately of his own accord. The other, from Lameque, Gloucester county, had been sent home in 1905, the disease arrested. He came back on March 17, 1909, his eyesight lost and general symptoms reappearing. I isited him twice during the year, but have not yet been able to persuade him to come back. This patient had no ulcerative sores when last seen. Using in this case the same ostracizing measures as in the past, and which have been found efficacious, I hope to see him at the lazaretto in the near future.

With the above exception, I am convinced that at present all known cases of leprosy in the vicinity are within our wards.

Of the three cases admitted during the year, one is from Lameque, one from St. Augustin, Northumberland county, and one from Tracadie.

Considering the number of patients—twenty—now at the lazaretto, we may at first believe that the disease is far from disappearing; but I am convinced that the diminution in ratio of the population is great, and with the same precautionary measures and effective isolation will steadily decrease.

The special treatment by chaulmoogra oil, strychnine, &c., inaugurated here in 1902, is still followed with apparent good results.

In regard to the keeping of the hospital and care given to our patients by the reverend sisters, I have but words of praise to give.

I have the honour to be, sir,
Your obedient servant,

J. A. LANGIS, M.D.,
Medical Superintendent.

The Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 15.

(Chas. A. L. Fisher, J.P.)

Montreal, March 31, 1910.

Sir,—I have the honour to submit this my report for the twelve months ended March 31, 1910, as Public Works (Health) Inspector, for the territory from Winnipeg east to the Atlantic ocean.

During that period I have personally visited and inspected all such works covered by the Public Works (Health) Act, 1899, as have in any way been brought to my notice.

The term has again been an exceptional one, in the almost non-appearance of contagious and infectious diseases among the men employed on the various public works of the Dominion, coming under my inspection, there being only one outbreak of small-pox, but in the neighbourhood of Cochrane and Lake Abitibi there have been a good many cases of typhoid fever in the camp hospitals.

I am pleased to be able to report again, that on my several tours of inspection of the public works of the Dominion in my district for the past year, I found the medical service given to be complete, and the sleeping quarters and boarding of the men to be fully equal to the very good conditions in that way reported last year.

The number of public works coming under the regulations of the Act, in the territory east of Winnipeg, have been comprised exclusively of railway construction.

The following is a detailed report of the works I have personally visited and inspected during the past twelve months, as coming more or less, under the regulations of the Public Works (Health) Act, 1899.

NATIONAL TRANSCONTINENTAL RAILWAY.

This road is being built by the Dominion Government, and at present all the sections have been given out by contract, between Winnipeg and Moncton, N.B., and are now under construction, with one exception.

I am pleased to report that on my visits to the works on said sections I found excellent hospital accommodation provided, and a duly qualified physician as dis-

trict medical supervisor over each section of camps, which could be conveniently covered by him within the requirements of the regulations.

With the exception of some cases of typhoid fever, and small-pox, there had been no outbreak of contagious diseases, and the health of the men had been excellent.

I give below the extent and location of the camps, with other particulars of the works carried on by the various subcontractors.

Section from Winnipeg east to junction of Grand Trunk Pacific branch, from Fort William, 245 miles. This is under contract to Mr. J. D. McArthur, of Winnipeg.

J. K. McLennan, M.D., of Winnipeg, is the chief medical officer on behalf of the contractor, with J. R. Gunn, M.D., who has been succeeded by L. A. C. Panton, M.D., as medical superintendent at Kenora, Ont.

Surfacing camps.—Between St. Boniface, Man., and Winnipeg River Crossing, Ont., about seventy-five miles. This work was being carried on by the J. D. McArthur Company, Limited, and about 400 men were employed thereon, who were in small camps scattered along the route. There were no contagious diseases, and only one death; the health of the men being excellent. J. D. McQueen, M.D.C.M., was the district medical officer of the work.

Track laying, station and tank camps.—Eighteen miles east and west from Winnipeg River Crossing. The J. D. McArthur Company, Limited, were doing this work, and about 400 men were employed, who were housed and boarded in boarding cars. There were no contagious diseases, the general health of the men being good. There was one death from uraimic poisoning, one from typhoid, and two from drowning. An excellent hospital was established at Winnipeg River Crossing. L. A. C. Panton, M.D., was the district medical officer.

Vermilion Bay Camps.—Anderson & Johnson, sub-contractors. Grading, rock work, and filling. There were five camps, the first of which was located fifteen miles north of Vermilion, a station on the Canadian Pacific railway, and could be reached by team from there. Three hundred and sixty men were employed thereat, housed in log buildings, and boarded by the sub-contractors. There had been no contagious or infectious diseases. No deaths, and the general health of the men, and the water obtained, and the sanitary conditions of the camps, all first-class.

There was a permanent hospital at camp No. 1, a few miles north on a good road and boat route, that was used when necessary.

H. L. Sims, M.D., was the resident district medical officer of this work, which is now complete.

Dryden, Ontario, Camps.—Eastern Construction Company, sub-contractors. This camp was situated about twenty-five miles northwest of Dryden, and reached by team from there. About 200 men were employed, who were well housed and boarded by the sub-contractors. There had been no contagious diseases, nor deaths, the health of the men being generally good.

A good hospital was maintained near the work, under the charge of John Brandon, M.D., who was the resident district medical officer of the work, which is now completed.

Wabigoon, Ontario, Camps.—The J. D. McArthur Company, Limited, were doing the work of track-laying and ballasting. About 200 men were employed, who were boarded and housed in boarding cars. There had been no contagious diseases or deaths, the general health of the men being good.

The hospital, under charge of John Brandon, M.D., was used, he being the district medical officer of the work, which is now about completed.

Superior Junction Section.—From Superior Junction east for 150 miles, to junction of the western section let to Messrs. E. F. & G. E. Fauquier. This is under contract to Messrs. O'Brien, Fowler & McDougall Bros., who have their headquarters at Fort William, Ont.

J. E. Joseph, of Pembroke, Ont., is the chief medical officer for the contractors, and J. M. McGrady, M.D., of Port Arthur, is the medical officer in charge of the work.

Three hospitals are maintained on various parts of the contract. Access to the work is from Westfort, Ont., over the branch of the Grand Trunk Pacific railway from there to Superior Junction.

Superior Junction Camps.—The Eastern Construction Company, Messrs. Bonfield & Harvey, Messrs. McDougall Bros., Archie McGougan, C.E., and Messrs. Farlinger, M. McCarthy & McDonald being the sub-contractors, and a steel gang operated by the J. D. McArthur Company, Limited. About 850 men are employed, who are located in twelve camps, and housed and boarded in log and board buildings, and in boarding cars by the sub-contractors and the McArthur Company. There were six cases of typhoid fever, and three of erysipelas, but the general health of the men and the sanitary conditions were good. There have been a number of minor accidents, and one death from pneumonia, and one from drowning.

A good hospital (No. 1) is maintained for these camps, located on the work about twelve miles from Superior Junction. W. Graham, M.D., is the district medical officer of these camps, with residence at the hospital.

Wako Camps.—Entrance thereto from Westfort, via Wako, Ont. Messrs, Finlayson & Barry, Quebec Constructing Company, and Messrs. Reid & McEwan being the sub-contractors. About 630 men were employed, who were distributed over eight camps, and housed and boarded in log buildings by the sub-contractors.

There had been no serious accidents, thirty-three cases of typhoid, and eight deaths; one from tetanus, one from pneumonia, one from carcinoma of liver, four from typhoid fever, and one accidental. The general health of the men had been good, and the sanitary conditions of the camp very fair.

A good hospital (No. 2) is maintained about twelve miles east from No. 1, and was in charge of E. B. Oliver, M.D., who resided there, and was the district medical officer of the camps, but later was replaced by J. B. Scott, M.D., who now is resident at the hospital, and is the district medical officer at the camps.

Heathcote Lake Camps.—Entrance to these camps is from Superior Junction, Ontario. Messrs. Fortin & Moffat, Fortin & Graelle, Reid & McEwan, and E. Koozinski, are the sub-contractors. About 1,050 men are employed, who are distributed over twenty-one camps, and housed and boarded in log buildings and boarding cars, by the sub-contractors. The general health of the men has been good, and also the sanitary conditions of the camps, with one exception. There were six cases of typhoid fever, and an epidemic of small-pox (of a mild nature) at some of these camps. There were four deaths from typhoid, and one from heart failure. There were a number of minor accidents, but none serious.

A good hospital has lately been established (No. 3) some miles east from No. 2, and is in charge of W. L. McCullough, M.D., who resides there, and is the district medical officer of the camps.

Nipigon Section.—From the east end of O'Brien, Fowler & McDougall Bros.' contract. East, 75 miles. This is under contract to Messrs. E. F. & G. E. Fauquier, of Ottawa, who have sub-let it to the Nipigon Construction Company, Limited, who have their headquarters at Nipigon, Ont., a station on the Canadian Pacific railway, and from which access is had to the work. Albert Laidlaw, M.D., of Kenora, Ont., is chief medical officer, and has three district medical officers on the work.

Nipigon Camps.—Messrs. McCaffery & McQuigge, Sherwood & Russel, Chambus & McColemen, Wallace Mackie, F. W. Murray & Sons, Simonds & Co., and H. Synn & Co., are the sub-contractors from the Nipigon Company. There are twenty-one camps, access to which is by boat, then a tramway of 15 miles, and then boat over Lake Nipigon. About 980 men are employed, who are housed and boarded in log buildings by the sub-contractors. There have been only four cases of typhoid fever from all these camps, the general health of the men, and the sanitary conditions of the camps being good. There were two serious accidents, and three deaths from explosions. There is one hospital (No. 1) maintained central to these camps, and Dr. J. H. Browning is the district medical officer, resident thereat, and in charge at the work.

Nipigon Camps.—Messrs. Sherwood & Russel, Tailliana & Co., Peter Bann & Co., Lugo Rudolph, H. Linn & Co., and McCaffrey & McQuigge, are the sub-contractors. There are nine camps, access to which is by boat, then by tramway, then by boat over Lake Nipigon.

About 360 men are employed, who are housed and boarded in log buildings by the sub-contractors. The general health of the men, and the sanitary conditions of the camps were fairly good. There were ten cases of typhoid fever, and one death therefrom.

An excellent hospital (No. 2) is maintained in a central location for these camps, and A. Collins, M.D., resided thereat, and was the district medical officer of the work.

Nipigon Camps.—Mr. W. Parsons, Messrs. H. Linn & Co., McCaffrey & McQuigge, and Sherwood & Russel, are the sub-contractors. There are six camps, at which about 350 men are employed. There were two cases of typhoid, and two deaths therefrom, also two as the result of an explosion. Hospital (No. 2) was used for these camps. J. H. McIntosh is the district medical officer of the work.

Abitibi Section.—From about eight miles west of the Abitibi River Crossing, westerly for 100 miles. This is under contract to Messrs. E. F. & G. E. Fauquier, of Ottawa. Access thereto is had from Cochrane, Ont., the northern terminus of the Timiskaming and Northern Ontario railway. A Henderson, M.D., is the chief medical officer of the work.

Abitibi West Camps.—Messrs. Fauquier Bros., Christin & Zebsron, Hamer & Zebsron, Messrs. Armstrong & Stewart, Vidum & Crerar, Christin & Zebsron, Bonneville & Preneveaux, Kennedy & Company, and J. F. Shear, are the sub-contractors. About 1,200 men are employed, who are located in twelve camps, extending over fifty miles of the work, and they are housed and boarded in log buildings by the sub-contractors.

There were no contagious or infectious diseases. There were two deaths, one from hemorrhage, and one from drowning, and a few serious accidents, but none fatal, the health of the men, and the sanitary conditions of the camps were good.

There is one well fitted hospital on the work; the chief medical officer, Dr. Henderson, residing at Cochrane, and visiting the camps adjacent, and J. G. Phair, M.D., residing at the hopsital and visiting the camps adjacent thereto.

Abitibi West Camps.—Messrs. Fauquier Bros., Christin & Zegsron, Hamer & O'Kelly, Armstrong & Stewart & Kennedy, are the sub-contractors.

About 470 men are employed, who are located in ten camps, extending along the line, and they are housed and boarded in log buildings by the sub-contractors.

There were a few cases of typhoid fever, but no other contagious or infectious diseases. There was one death and one serious accident. The general health of the

men and the sanitary conditions of the camps were good. There is a well-fitted hospital (No. 2) on the work, with J. W. Hunt, M.D., the district medical officer, residing thereat.

Abitibi Section East.—From about eight miles west of the Abitibi River crossing easterly for 150 miles. This section is under contract to the Grand Trunk Pacific Construction Company, and was sub-let by them to the J. H. Reynolds Construction Company, of St. Louis, U.S.A., but as they failed to make sufficient progress thereon, their contract was annulled, and it was again sub-let to Messrs. Foley, Welch & Stewart, who have their headquarters at Matheson, Ont., and are now doing the work. The entrance to this work is from Matheson, and also from Cochrane, Ont. Three hospitals are maintained on the work. John McComb, M.D., is the chief medical officer, with three district medical officers as assistants.

Abitibi East Camps.—Messrs. McDougall Bros., Tomlinson & Co., Courtenay & Co., Osterberg & Co., Hogan & Johnson, Italian Co., and McPeake Bros., are the sub-contractors. About 1,250 men are employed who are located along the line, and boarded and housed in wooden buildings by the sub-contractors.

There were thirty-one cases of typhoid with only two deaths. There were no serious accidents, and the general health of the men, and the sanitary conditions of the camps were good.

An excellent hospital is maintained for these camps, and is located on an island in Lake Abitibi, within easy access of, and fairly central to the construction work and camps. D. B. Kennedy, M.D., resided at the hospital and is the district medical officer of camps.

Abitibi East Camps.—Messrs. John Linder, W. S. Tomlinson & Co., and P. Courtney, are the sub-contractors.

About 395 men are employed, who are located in four camps along the line, and housed and boarded in wooden buildings by the sub-contractors. There was only one case of typhoid, no deaths, no serious accidents, and the general health of the men, and the sanitary conditions of the camps were very good. The hospital at Abitibi Lake was used, when necessary. T. A. J. Duff, M.D., is the district medical officer.

Abitibi East Camps.—Messrs. Henry Freeman, Dr. Shirhinnis & Co., John Linder and Hogan and Tomlinson are the sub-contractors. About 500 men are employed, who are located in five camps, and housed and boarded in wooden buildings by the sub-contractors. There were no contagious diseases, deaths or serious accidents, and the general health of the men was good, and the sanitary conditions of the camps excellent. A good hospital is maintained at Whitefish, with D. R. Cameron, M.D., the district medical officer of the work, and resident thereat.

Abitibi East Camps.—Messrs. McDougall Bros., Foley Bros., Butler & McCoy, and Hogan & Johnson are the sub-contractors. About 330 men are employed; located in six camps in the neighbourhood of Abitibi Crossing, and are housed and boarded in log camps by the sub-contractors. There were two cases of typhoid, one death (suicide), and no serious accidents. The general health of the men, and the sanitary conditions of the camps were good. There is an hospital at Abitibi Crossing, with W. S. Millyard, M.D., the district medical officer, resident thereat.

Quebec Section, District 'B.'—From Weymontachene, Que., east to a point a few miles northwest of La Tuque village, a distance of about forty-five miles. This section was let to the Grand Trunk Pacific Construction Company, and was sub-let by them to Messrs. Macdonnel & O'Brien. Entrance to this work is now obtained over the Transcontinental railway, on the section about completed by Messrs. Macdonnel & O'Brien, from Hervey Junction to a few miles northwest of La Tuque, a distance of about one hundred miles.

Weymontachene Camps.—Messrs. Leach, Pearson & Wright, Craig & Thompson, Doheny & Donovan, H. McKinnon, M. McCarthy, and D. R. McDonald, are the sub-contractors.

About 650 men are employed, who are located in eight camps at various points running east along the line, and are housed and boarded in wood, log and board buildings by the sub-contractors. There were three cases of typhoid fever, but no deaths or serious accidents occurred.

An hospital was maintained at Vermilion river. James Franckum, M.D., was the district medical officer of the camps up to the end of December last, but resigned, and was replaced by P. O. Coulombe, M.D.

Vermilion Camp.—Messrs. Jackson & Connolly, N. D. Finlayson & Co., Walter, O'Brien & Martin, Hugh Grant, D. R. McDonald, and a Steam Shovel Outfit, are the sub-contractors.

About 800 men are employed, who are located in nine camps about one mile apart, and boarded and housed in good log and board buildings by the sub-contractors. There were no contagious or infectious diseases, deaths or serious accidents, and the health of the men, and the sanitary conditions of the camps, good. The St. Maurice hospital, about four miles west from La Tuque, where John McCombie, M.D., makes his headquarters, is used for these camps, and P. O. Coulombe, M.D., was the district medical officer thereof.

La Tuque Camps.—Messrs. Craig & Thompson, Jas. F. Munro, D. R. McDonald, N. D. Finlayson & Co., Hugh Grant, O'Brien & Martin, Jackson & Connolly, and Bulger, Mulligan and Dooner, are the sub-contractors.

About 1,435 men are employed; located in thirteen camps on the line east to La Tuque. There were no contagious diseases, but one death (from suffocation), and no serious accidents. The health of the men and the sanitary conditions of the camps were excellent.

The St. Maurice hospital is used when necessary. J. C. Byers, M. D., is the district medical officer of these camps.

Quebec Section East, District 'B.'—From a point near the Quebec bridge easterly for a distance of 150 miles. This section is under contract to Messrs. M. P. and J. T. Davis, of Quebec, and is about completed with the exception of the steel.

Cape St. Ignace Camp.—Messrs. Anderson & Mann, sub-contractors. Only sixty men were latterly employed on the work, which has been completed for some months. There had been no serious diseases, accidents or deaths, the health of the men being excellent. J. E. A. Cloutier, M.D., was the district medical officer of the work.

Notre Dame du Lac Camps.—Messrs. Cavicchi & Pegano, Ryan, and McDonald and Mr. Murison, are the sub-contractors.

About 400 men are employed, who are located in seven camps, and boarded and housed in good board buildings by the sub-contractors. There were no contagious diseases, one death (from falling tree), and no serious accidents. The health of the men was excellent, and the sanitary conditions of camps, good. J. B. Pregay, M.D., was the district medical officer of the work.

New Brunswick Section, District 'A.'—From a point near Grand Falls, westerly to the boundary between the province of New Brunswick and Quebec, a distance of about sixty-two miles. This was let to Messrs. Lyons & White, who have made their headquarters at Edmundston, N.B., and have sub-let the work to various sub-contractors, seven in number, who had about 550 men employed and located in nine camps, distributed along the whole route. There had been two cases of typhoid, but

no contagious or infectious disease. There were two deaths from explosion. The general health of the men and the sanitary conditions of the camp had been fairly good.

The General hospital at St. Basile, N.B., is used. Drs. P. H. Laporte, J. A. Guy, and C. G. Main are the district medical officers, each covering about twenty miles of the work.

Grand Falls Section, District 'A.'—From a point near Grand Falls, N.B., to Plaster Rock, N.B., 31½ miles. This is under contract to the Willard Kitchen Company, who have their headquarters at Grand Falls, N.B.

Grand Falls Camps.—Messrs. M. F. Hinniger, Johnson Bros., Whitehead Bros., and J. C. Kitchen are the sub-contractors.

About 350 men are employed, who are located in seven camps, and housed and boarded by the sub-contractors in wooden buildings. There had been no contagious or infectious disease, or serious accidents, but one death, the general health of the men being excellent, and the sanitary conditions of the camps, good.

A temporary hospital is maintained at Grand Falls. B. A. Puddington, M.D., is the district medical officer of the work, which is well advanced.

Grand Falls Camp.—Messrs. Phillips & Burden, Farrington & McDonald, Wesley Kitchen, Harry Kitchen, and Cavicchi & Pegano, are the sub-contractors.

About 225 men are employed, who are located in seven camps, and housed and boarded in wooden buildings by the sub-contractors. There had been one case of typhoid, and one death, the general health of the men being good. J. D. Coffin, M.D., is the district medical officer of these camps.

Plaster Rock Section, District 'A.'—From Plaster Rock to Chipman, N.B., 107 miles. There are two divisions in the above distance, one of 67 miles, and one of 40 miles, both under contract to the Grand Trunk Pacific Construction Company, who sub-let them to the Toronto Construction Company, who make their headquarters for the work at Plaster Rock.

Plaster Rock Camps.—East from there about 26 miles. Johnson Bros., are the sub-contractors, having twelve camps, and employing 500 men, who are boarded and housed in good board camps by the sub-contractors. There had been no contagious or infectious diseases, serious accidents, or deaths, the health of the men and the general sanitary conditions, being good.

An hospital is provided at Plaster Rock. J. D. Coffin, M.D., is the district medical officer.

Cross Creek and Boiestown Camps.—From the junction of the Plaster Rock camps, east to Chipman. There are ten sub-contractors, and 1,063 men employed, who are located in sixteen camps scattered over the route. There had been no contagious or infectious disease, but there were two deaths from accidents. The general health of the men and the sanitary conditions of the camps were good. The men were boarded and housed in good log and board buildings, and in boarding cars, by the sub-contractors.

An excellent hospital is maintained at Chipman, N.B., by H. B. Hay, M.D., who is the chief medical officer of these camps, and has A. Stirling, M.D., at Cross Creek, and L. Chapman, M.D., at Boiestown, N.B., as district medical officers.

Chipman Section, District 'A.'—From Chipman, N.B., east eight miles. John W. McManus Company are the contractors. There are two camps with about 75 men employed, who are housed in log and board buildings, some boarding themselves, others boarded by the contractors. There had been one case of typhoid fever, but no deaths. The general health and sanitary conditions were fairly good. H. B. Hay, M.D., is the medical officer of the work, and his hospital at Chipman is used.

Moncton Section, District 'A.'—From eight miles east, to Moncton, N.B., fifty miles. This is under contract to the Grand Trunk Pacific Construction Company, and was sub-let by them to the Corbett Floesch Company. About 550 men are employed, who are well housed in five camps, and boarded by the sub-contractors, with the exception of a few who lived in the locality. There had been no serious disease, but a few minor accidents. The general health of the men was good, and the sanitary conditions excellent.

Dr. Hay's hospital at Chipman, and the General hospital at Moncton are used. H. B. Hays, M.D., of Chipman, is the chief medical officer, and attends the men in the western camps, and A. R. Myers, M.D., of Moncton, attends the men at the eastern camps. Considerable work has been done, and rails laid on this contract, which is approaching completion.

Canadian Northern Ontario Railway, Sellwood Branch.—From Sudbury, Ont., north about thirty-two miles. Messrs. Mackenzie, Mann & Company, of Toronto, were the chief contractors, and Angus Sinclair, C.E., the sub-contractor, with six sub-contractors from him. About 400 men were employed, who were boarded and housed in log and frame buildings well located and ventilated. There had been no serious disease, and but one death, a man jumping from a car, and being instantly killed.

A temporary hospital was located on the work, under charge of W. N. Robertson, M.D., who was the district medical officer. This work is now completed.

GOWGANDA TRANSPORT RAILWAY.

From Gowganda Junction, Ont., to Gowganda, about sixty miles. The Gowganda Transport Company are the contractors. About 200 men are employed, who are boarded and housed in plastered log cabins by the contractors. There had been no serious diseases, nor deaths, the general health of the men being good, and the sanitary conditions of camps, excellent.

A temporary hospital was located at Gowganda, and the Sudbury hospital was used when necessary. W. N. Robertson, M.D., is the district medical officer.

CANADIAN PACIFIC RAILWAY.

Georgian Bay and Seaboard Branch.—From near Coldwater to a point on Hogg Bay, Victoria harbour, about fourteen miles, which was under contract to the Toronto Construction Company, and sub-let to Messrs. Corbett & Gimlet, of Victoria Harbour. About 75 men were employed, who were well housed and boarded by the sub-contractors. There had been no serious diseases, accidents or deaths, and the general health of the men, and the sanitary conditions had been good.

The hospital at Midland, Ontario, had been used when necessary. W. B. Boyd, M.D., of Coldwater, Ont., was the district medical officer of camps. This work was completed in June last.

An epidemic of small-pox (of a mild nature) developed in a number of the Heathcote Lake camps in the beginning of February last, on the contract of Messrs. O'Brien, Fowler and McDougall Bros., east from Superior Junction, Ont. By the prompt action of W. L. McCullough, M.D., the district medical officer of the camps, all who had come in contact with the infected cases were quarantined, an infectious hospital erected, a quarantine established, and cooks, orderlies, and guards put in charge, and every means used to check the disease, so that up to the present, no fresh cases have been developed, and no deaths therefrom have been reported to me. All the men under quarantine, on being permitted to leave, were given a bath and a full suit of new clothes, and all their old garments were burnt.

On all the above public works, during the past twelve months, which cover only the territory of the Dominion, east of Winnipeg, there was an average of 17,300 men employed, with 42 qualified medical officers in charge of camps.

There were—

Cases of typhoid fever	136
Cases of small-pox	11
Cases of erysipelas	3
Deaths (as under)	48
Typhoid fever	18
Pneumonia	2
Tetanus	1
Hemorrhage	1
Meningitis	1
Endocarditis	1
Intestinal obstruction	1
Heart failure	1
Carcinoma of liver	1
Fracture of skull	1
Killed by train	2
Killed by falling tree	1
Jumped off car	1
Explosion	1
Suffocated	1
Poisoning (suicide)	1
Drowning	5
Accidents	8

In closing this report for the twelve months ending March 31, 1910, I am pleased to be able to draw your attention to the few cases of contagious and infectious diseases, I have had to report, considering the very large body of men employed, their general healthfulness, the sanitary conditions of the camps, and the care and attention given by the contractors and medical officers, in trying to carry out and fulfil such clauses of the regulations of the Public Works (Health) Act, 1899, as may have been thought necessary by your inspector.

I have the honour to be, sir,
Your obedient servant,

CHAS. A. L. FISHER,
Public Works (Health) Inspector

The Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 16.

(A. E. Clendenan.)

Edmonton, March 31, 1910.

Sir,—I have the honour of submitting the following report for the year just ended, as Public Works (Health) Inspector for the territory between Winnipeg and the Pacific coast.

The sections given below have been inspected once and a good deal of it twice. Your inspector has endeavoured to keep in touch at all times with the sanitary condition of railroad construction camps, with the proper supply of grade doctors, and suitable hospital accommodation, by a fairly complete mailing list of contractors and a full list of medical men.

CANADIAN NORTHERN RAILWAY.

Maryfield branch. Ochre River extension, Hallboro branch, Oak Point extension, Goose Lake extension, Prince Albert South extension, Vegreville branch, Morinville branch, Thunder Hill branch, Wakopa extension, Rossburn line, line from Russell west, Shelbrook branch (on Prince Albert-Battleford line).

Most of the above work was done by the Northern Construction Company and the Cowan Construction Company, with numerous sub-contractors, and Malcolm McCrimmon on the Morinville branch, and Merry & Mackenzie on the Shelbrook branch. Some of the short branches were completed early in the season. Owing to unusually good weather last year for railway construction work more line was built than had been reckoned on early in the spring, and in some instances toward the close of the season the distance to hospitals was left unchallenged.

GRAND TRUNK PACIFIC.

Main line.—Pembina to Wolf creek, Wolf creek to Athabaska river, Prince Rupert to Copper river, Copper river to Hazelton.

Branches.—Melville to Yorkton, Melville to Regina, Tofield to Calgary.

The main line contractors are Foley, Welsh & Stewart, assisted by many sub-contractors. The heaviest of the branch line grading was done by J. D. McArthur and G. Webster.

CANADIAN PACIFIC RAILWAY.

Kipp extension, Langdon branch, Stettler extension, improvements on main line, Crowsnest and Calgary and Edmonton line. Several short lines in Manitoba and Saskatchewan. Completion of Saskatoon-Wetaskiwin line, Esquimalt-Nanaimo extension to Alberni.

Most of the Canadian Pacific railway work was done under the direct supervision of the company.

The Esquimalt-Alberni contract is held by Janse, MacDonald & Timothy. They sublet over the whole portion under construction.

On Stettler extension, Peterson & Nicholson were the contractors.

GREAT NORTHERN RAILROAD.

V. V. and E. railway, between Keremos and Princeton, B.C. The contractor was J. W. Stewart, of Spokane.

HUDSON'S BAY AND PACIFIC RAILROAD.

Contractor, A. J. Taylor; surgeon-in-chief, Dr. Reid, Prince Albert.

This is a new company just commencing operation from Prince Albert, Saskatchewan, to construct towards Fort Churchill.

ALBERTA AND GREAT WATERWAYS RAILROAD.

Edmonton to Fort McMurray, Alberta; construction just beginning.

Throughout the entire year no accidents have occurred, except accidents to individuals.

The only approach to an epidemic of any contagious disease was the occurrence of eight cases of typhoid, spread over several months and four different camps, on the Canadian Northern railway, Calgary line between Vegreville and Camrose, Alberta. Typhoid was prevalent at the time in the nearby towns. Hospitals have in nearly all cases been provided as required, and in the one or two cases where the service was not up to the mark, an intimation of the fact was followed by improvement. A good class of medical men are found everywhere in the railway service. Contractors recognize that there is more money to be made by giving good service and getting the cases off their hands at the earliest possible moment. Everywhere the employees are better satisfied to be taken a little farther to a city or town hospital than to be kept in the necessarily less efficient hospitals on the grade.

No complaints have been made to me by employees.

I have the honour to be, sir,
Your obedient servant,

A. E. CLENDENAN,
Public Works (Health) Inspector.

The Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 17.

HEALTH OF ANIMALS BRANCH—QUARANTINE REGULATIONS.

INTERPRETATION.

Section 1.—In these regulations, unless the context otherwise requires:—

(*a*) The expression 'the minister' means the Minister of Agriculture.

(*b*) The expression 'inspector' means a veterinary or other inspector duly appointed under the provisions of The Animal Contagious Diseases Act.

(*c*) The expression 'veterinary inspector' means a duly qualified veterinary surgeon appointed an inspector under the provisions of The Animal Contagious Diseases Act.

(*d*) The expression 'inspection' means an inspection made by a duly authorized inspector.

(*e*) The expression 'contagious' means communicable by close contact or inoculation.

(*f*) The expression 'infectious' means communicable in any manner.

(*g*) The expression 'infectious or contagious disease' includes, in addition to other diseases generally so designated, glanders, farcy, maladie du coït, contagious pleuro-pneumonia, foot and mouth disease, rinderpest, anthrax, Texas fever, hog cholera, swine plague, mange, scab, rabies, tuberculosis, actinomycosis and variola ovina.

Section 2.—The Veterinary Director General is in charge of the Health of Animals Branch of the Department of Agriculture.

Section 3.—The following customs ports are hereby declared to be animals' quarantine stations, and all animals imported into Canada subject to quarantine must be entered through said stations, viz.:—Halifax, N.S.; St. John, N.B.; Charlottetown, P.E.I.; Sherbrooke and St. Johns, Que.; Bridgeburg, Windsor and Sarnia, Ont.; Emerson, Gretna and Bannerman, Man.; North Portal, Wood Mountain, Big Muddy and Willow Creek, Sask.; Pendant d'Oreille, Coutts and Twin Lakes, Alta.; Gateway, Kingsgate, Rossland, Nelson, Grand Forks, Midway, Myncaster, Vancouver and Victoria, B.C.; Whitehorse, Y.T. Quebec is also declared to be an animals' quarantine station in so far as importations into Canada by sea are concerned.

Section 4.—Animals subject to inspection only, but which are not subject to quarantine, may enter through the aforesaid and at the following ports:—Pictou, North Sydney and Yarmouth, N.S.; St. Stephens, Woodstock, McAdam Junction, Edmundston, St. Leonards, Debec Junction and Aroostook Junction, N.B.; Comin's Mills, Lake Megantic, Coaticooke, Beebe Junction, Highwater, Abercorn, St. Armand, Lacolle Junction, Noyan Junction, Athelstan and St. Agnes de Dundee, Que.; Cornwall, Prescott, Morrisburg, Brockville, Kingston, Cobourg, Toronto, Niagara Falls, Sault Ste. Marie, Port Arthur, Rainy River and Fort Frances, Ont.; Marienthal, Sask.; Rykerts, Osoyoos, Huntingdon, Keremeos, New Westminster, White Rock and Nanaimo, B.C.

Section 5.—The Minister of Agriculture is hereby empowered to cancel as quarantine and inspection station any of the places above named, and to select such other sites in exchange for or in addition to the above as he may from time to time deem expedient.

IMPORTATIONS IN GENERAL.

Section 6.—The minister may prohibit or regulate the importation of animals from any country or any district where he has reason to believe that contagious disease of animals exists.

Section 7.—(*a*) Persons contemplating the importation of animals from any part of the world, except the United States and Newfoundland, must first obtain from the minister a permit therefor. Such permits shall not be available at any port other than the one mentioned therein.

(*b*) Applications for such permits shall be in writing, and shall state the number and kind of animals for which the permit is applied, the country of origin and probable date of shipment, the port of embarkation, the port at which the animals are to be landed and the approximate date of their arrival. The statements contained therein may be required to be verified on oath, the minister deciding in every case whether a permit will be granted.

(*c*) Animals from countries other than those above mentioned arriving at any port in Canada without such permit shall not be admitted to Canada unless and until ordered by the minister.

(*d*) Unless otherwise ordered by the minister, the provisions of this section shall not apply to the importation of horses from any of the countries of Europe.

Section 8.—The importation by sea into Canada of animals from all countries, other than the United States, Newfoundland and Mexico, is prohibited except at the ports of Victoria and Vancouver, B.C.; Quebec, Que.; St. John, N.B.; Halifax, N.S.; Charlottetown, P.E.I., and such other ports as may hereafter be indicated by the minister.

Section 9.—Animals imported via United States ports must be accompanied not only by the necessary health certificates from the country of origin, but also by a certificate of quarantine or inspection signed by a veterinary inspector of the United States Bureau of Animal Industry.

Section 10.—Persons in charge of vessels conveying animals to Canada must immediately on arrival in port, notify the superintendent of the animals' quarantine station of the arrival of such vessel and the number and kind of animals on board thereof.

Section 11.—All importers must certify under oath, before making custom entry, the place of origin of the animals imported by them.

Section 12.—All animals arriving in Canada through any of the above mentioned ports on the Canadian seaboard shall be subject to inspection on arrival by inspectors who may, from time to time, be appointed for that purpose.

Section 13.—All inspections of imported animals must be made in daylight.

Section 14.—For the purpose of carrying out those regulations, inspectors shall have free access to any wharf, vessel, car, or to any place where animals may be found.

Section 15.—Inspectors shall visit the vessels or cars conveying animals into the said ports, and after inspecting such animals and finding them free from disease, shall superintend their landing or unloading, order them to be placed and disposed of according to the requirements of the case, and see that those to be quarantined are conveyed to the proper quarantine station. Inspectors shall also superintend the landing, unloading and disposal of fodder, litter, blankets, troughs and other articles which may have been used by or for the said animals.

Section 16.—Importers of animals will be required to certify under oath that the health certificates referred to in these regulations apply to the said animals and to no other, and that the district named is the actual one from which these animals came.

Section 17.—Any authorized interference with animals after inspection, whether by substitution or otherwise, or any evasion, or misrepresentation, will be deemed a breach of these regulations, and in addition will render the shipment liable to seizure and detention pending the orders of the minister as to its disposal.

Section 18.—Inspectors may, if they deem it necessary, order the cleansing and purifying of any vessel, place, vehicle, building or article, and direct such precautionary measures to be taken as they may consider advisable, pending the decision of the minister as to the ultimate disposal of such vessel, place, vehicle, building or article.

Section 19.—No person shall import or introduce, or attempt to import or introduce, into Canada any animal contrary to these regulations or which is affected with any contagious or infectious disease, and any animal which is imported or introduced, or attempted to be imported or introduced, into Canada contrary to these regulations or which is affected with or suspected of being affected with any contagious or infectious disease, may be forthwith destroyed, refused admission to Canada, or otherwise disposed of as the Veterinary Director General may direct.

Section 20.—The importation of head ropes which have been used for tying up cattle is prohibited, and all vessels carrying or having on board such head ropes in contravention of this regulation shall be liable to be declared infected under the Animal Contagious Diseases Act.

Section 21.—The importation of the manure of swine is prohibited.

Section 22.—Any inspector may declare any railway car, or other land or water conveyance bringing animal manures into Canada, an infected place within the meaning of the provisions of the Animal Contagious Diseases Act, whenever he shall have reason to believe or to have well-founded suspicion that such may be a source of danger as respects the introduction of diseases; and the unloading of such car or other land or water conveyance shall be in consequence prohibited until otherwise ordered in accordance with the provisions of the said Act.

Horses, Mules and Asses.

Section 23.—Horses, mules and asses imported from countries other than the United States, Newfoundland and Mexico, must be accompanied by the certificate of a qualified veterinarian and of the local authority of the district whence they came. that no glanders, maladie du coït or other serious infectious or contagious disease affecting horses has existed in said district for a period of six months prior to their shipment.

Section 24.—Horses, mules and asses imported from countries other than the United States, Newfoundland and Mexico, consigned to Montreal, may be, unless otherwise ordered by the minister, inspected at that port. Such animals landing at any of the other ports named shall be inspected at such ports.

Cattle.

Section 25.—Cattle imported from countries other than the United States, Newfoundland and Mexico, must be accompanied by the certificate of a qualified veterinarian and of the local authority of the district whence they came, that no contagious pleuro-pneumonia, rinderpest or foot and mouth disease has existed in said district for a period of six months prior to their shipment.

Section 26.—(*a*) A quarantine of thirty days shall be enforced upon cattle imported from the United Kingdom, to be counted from the date of arrival at the quarantine station.

(*b*) A quarantine of ninety days shall be enforced upon cattle imported from all other countries except the United States, Newfoundland and Mexico, to be counted from the date of clearance of the vessel carrying the same from the port at which they were embarked.

Other Ruminants.

Section 27.—Sheep and goats imported from countries other than the United States, Newfoundland and Mexico, must be accompanied by the certificate of a qualified veterinarian and of the local authority of the district whence they came, that no foot and mouth disease has existed in said district for a period of six months prior to their shipment.

Section 28.—A quarantine of thirty days shall be enforced upon all sheep and goats imported from countries other than the United States, Newfoundland and Mexico, to be counted from the date of clearance of the vessel carrying the same from the port at which they were embarked.

Swine.

Section 29.—Swine imported from countries other than the United States, Newfoundland and Mexico, must be accompanied by the certificate of a qualified veterinarian and of the local authority of the district whence they came, that no hog cholera, swine plague or foot and mouth disease has existed in said district for a period of six months prior to their shipment.

Section 30.—A quarantine of thirty days shall be enforced upon all swine imported from countries other than the United States, Newfoundland and Mexico, to be counted from the date of clearance of the vessel carrying the same from the port at which they were embarked.

IMPORTATION OF ANIMALS FROM THE UNITED STATES, NEWFOUNDLAND AND MEXICO.

Section 31.—All animals imported into the Dominion of Canada from the United States, Newfoundland and Mexico, must be accompanied by a statutory declaration or affidavit made by the owner or importer, stating clearly the purpose for which said animals are imported, viz., whether for breeding purposes, for milk production, for work, for grazing, feeding or slaughter, or whether they form part of settlers' effects, or whether they are entered for temporary stay, as provided by these regulations.

Section 32.—Said declaration or affidavit must be presented to the collector of customs at the port of entry, who will decide whether the animals are entitled to entry under these regulations, and who will notify the veterinary inspector of the Department of Agriculture in all cases where the regulations require an inspection to be made.

ANIMALS FROM THE UNITED STATES.

Horses, Mules and Asses.

Section 33.—The importation of branded or range horses, mules and asses, other than those which are gentle and broken to harness or saddle, is prohibited.

Section 34.—Horses, mules or asses, shall be inspected, and must be accompanied by:—

(*a*) A satisfactory certificate of mallein test dated not more than thirty days prior to the date of entry, and signed by an inspector of the United States Bureau of Animal Industry; or,

(c) A similar certificate from an inspector of the Canadian Department of Agriculture.

Section 35.—When not so accompanied, such horses, mules or asses must be submitted to the mallein test either at the quarantine station where entry is made, or, under such restrictions as the Veterinary Director General may prescribe at point of destination.

Section 36.—When tested at the port of entry, if any reactors are found they shall be slaughtered without compensation, or definitely marked and returned to the United States, and must not again be presented for entry. All horses, mules or asses in the same consignment shall be returned to the United States, but the non-reactors may be again presented for entry and further tested after the lapse of a period of not less than fifteen days from the date of the first test, provided that satisfactory evidence is produced to the effect that they have not, during the said period, been in contact with affected animals. When tested at destination points all animals reacting to the test will be slaughtered without compensation, while those comprising the rest of the shipment will be detained in quarantine until it is shown to the satisfaction of the Veterinary Director General that they are free from disease.

Section 37.—No compensation will, under any circumstances, be paid for horses reacting to mallein within six months after the date of their importation to Canada.

Cattle.

Section 38.—All cattle shall be inspected and, if so ordered by the minister, may be detained, isolated, submitted to the tuberculin test, dipped or otherwise treated, or in default of such order, where the inspector has reason to believe or suspect that animals are affected with or have been exposed to contagious or infectious disease.

Section 39.—Cattle for breeding purposes and milk production six months old or over, if unaccompanied by a satisfactory tuberculin test chart dated not more than thirty days prior to the date of entry and signed by a veteriuarian of the United States Bureau of Animal Industry, must be detained in quarantine for one week or such further period as may be deemed necessary, and subjected to the tuberculin test; cattle reacting thereto must be returned to the United States or slaughtered without compensation.

Section 40.—Importers may be required to furnish a statutory declaration that the chart produced applies to the cattle it purports to describe and no other.

Other Ruminants.

Section 41.—All sheep and goats shall be inspected, and, if so ordered by the minister, may be detained, isolated, dipped or otherwise treated, or, in default of such order, where the inspector has reason to believe or suspect that the animals are affected with or have been exposed to contagious disease.

Swine.

Section 42.—All swine must be accompanied by a certificate signed by a veterinarian of the United States Bureau of Animal Industry, stating that neither swine plague nor hog cholera has existed within a radius of five miles of the premises in which they have been kept for a period of six months immediately preceding the date of shipment, but such swine shall nevertheless be inspected, and shall be subjected to a quarantine of thirty days before being allowed to come in contact with Canadian animals.

Animals for Exhibition.

Section 43.—Animals other than swine may be admitted on inspection at quarantine and inspection ports only, for purposes of exhibition or other temporary stay, subject to the usual customs regulations.

Animals for Transit through Canada.

Section 44.—Animals may be admitted from any part of the United States into Canada for transit to any other part of the United States in bond, and (with the exception of swine) will be admitted to Canada in bond for transit to any Canadian port for exportation by sea to Europe or elsewhere. Such animals are to be subject to inspection at the Canadian port of shipment.

Section 45.—The transit of such animals shall be subject to such regulations as the minister shall, from time to time, prescribe.

ANIMALS FROM MEXICO.

Section 46.—Any person contemplating the importation of animals from Mexico must, in addition to all other requirements of this order, first obtain from the minister a permit therefor.

Applications for such permits shall be in writing, and shall state the number and kind of animals to be imported, the district and state in Mexico whence they are to be shipped and the probable date of their arrival at and the name of the Canadian port of entry. The statements contained therein may be required to be verified on oath, the minister deciding in every case whether a permit will be granted.

Mexico Animals Bonded through United States Territory for Admission to Canada.

Section 47.—Animals passing in bond through United States territory for importation to Canada must be accompanied by a certificate of health signed by a veterinarian of the United States Bureau of Animal Industry, and by an affidavit from the owner or importer that the said certificate refers to the animals in question. Such animals shall nevertheless be subject to inspection, and if necessary to detention, before being permitted to enter Canadian territory. If found diseased such animals are to be subject to and dealt with according to the orders of an inspector under instructions from the Veterinary Director General.

Horses, Mules and Asses.

Section 48.—The importation of branded or range horses, mules and asses other than those which are gentle and broken to harness or saddle is prohibited.

Section 49.—All horses, mules and asses shall be inspected and shall be submitted to the mallein test before being allowed to enter Canada. If any reactors are found they shall be slaughtered without compensation.

Cattle.

Section 50.—All cattle shall be inspected and if so ordered by the minister may be detained, isolated, submitted to the tuberculin test, dipped or otherwise treated, or, in default of such order, where the inspector has reason to believe or suspect that animals are affected with or have been exposed to contagious or infectious disease.

Other Ruminants.

Section 51.—All sheep and goats shall be inspected, and, if so ordered by the minister, may be detained, isolated, dipped or otherwise treated, or, in default of such order, where the inspector has reason to believe or suspect that the animals are affected with or have been exposed to contagious or infectious disease.

Swine.

Section 52.—All swine shall be inspected and shall be subjected to a quarantine of sixty days before being allowed to come in contact with Canadian animals.

ANIMALS FROM NEWFOUNDLAND.

Section 53.—All animals imported from Newfoundland shall be inspected and, if so ordered by the minister, may be detained, isolated, tested, dipped or otherwise treated, or, in default of such order, where the inspector has reason to believe or suspect that animals are affected with or have been exposed to contagious disease.

REGULATIONS OF QUARANTINE.

Section 54.—Quarantine stations shall be under the care and subject to the orders of the officers appointed for that purpose hereinafter referred to as superintendents, who shall have the general superintendence and control of the servants or other persons, and of all other matters connected therewith.

Section 55.—Animals in any quarantine station shall be treated and dealt with under the direction of the superintendent of the said station and all articles used for, about or in connection with the said animals shall be in like manner subject to his direction and supervision.

Section 56.—Cattle six months old or over imported from countries other than the United States, Newfoundland and Mexico shall not be discharged from quarantine until they have been submitted to the tuberculin test by the superintendent of the quarantine or other duly authorized officer.

Section 57.—Cattle reacting to the tuberculin test, but not showing clinical symptoms, shall be permanently marked in the right ear with the letter 'T' by the officer making the test, and may then be released at the expiry of the prescribed period of quarantine if found free from all other infectious diseases.

Section 58.—Cattle showing clinical symptoms of tuberculosis shall be destroyed or otherwise disposed of as the minister may direct.

Section 59.—The minister or the Veterinary Director General may authorize the destruction of any quarantined animal or all or any portion of the articles used in the care of the said animals, and such destruction shall take place under the supervision of the superintendent, and in the manner prescribed by him.

Section 60.—The expenses of feeding, treating and caring for animals detained in quarantine, with the exception of those for the use of grounds and shelters, shall be borne by the owner or importer, and such expenses shall be paid before the animals are permitted to leave the quarantine, and in default of such payment within fourteen days after the expiration of the period of quarantine, the superintendent may, on fourteen days' notice in writing, delivered or sent by mail to the owner or importer, cause the said animals to be sold to meet the said expenses, together with the expenses of and incidental to the sale of the said animals, the balance, if any, to be handed over to the owner.

Section 61.—No animal under quarantine shall be allowed to come in contact with any Canadian animal until duly discharged from quarantine.

Section 62.—No animal under quarantine shall be removed from a quarantine station until duly discharged therefrom by the superintendent or other duly authorized officer.

Section 63.—No person shall remove or attempt to remove any animal from a quarantine station without the authority of the superintendent or other duly authorized officer.

Section 64.—No indemnity shall be allowed for any injury or loss sustained in connection with any animal while detained in quarantine.

EXPORTATION.

Section 65.—Canadian animals for transit to any shipping port of the United States for export by sea to Europe or elsewhere must be inspected at such places in Canada as the minister may from time to time designate; must not be shipped from the place of inspection until they have been certified by a duly authorized veterinary inspector to be free from infectious and contagious disease and otherwise fit for export, and must not be permitted by collectors of customs to leave Canada unless accompanied by such certificate.

Section 66.—Animals for exportation by sea should, if possible, reach the port of exportation not less than twelve hours before shipment for rest and inspection. Animals failing to do so shall be liable to detention in the discretion of the inspector.

Section 67.—Inspectors shall at all times have full power to detain animals for such time as they consider sufficient to enable them to make a thorough and satisfactory inspection and to ascertain that all the provisions of these regulations relating thereto have been duly observed and complied with.

Section 68.—Owners or persons in charge of animals for exportation shall give twenty-four hours' notice, addressed to the inspector at his office, stating the number and kind of such animals and the expected time of their arrival at the port of exportation.

Section 69.—No animals except as hereinafter provided, shall be permitted to be placed on board any steamship or other vessel for exportation at any Canadian port until they have been inspected and approved by a duly authorized veterinary inspector at such port and certified by him to be free from contagious disease and in every way fit for export; such inspection to be made within twenty-four hours of embarkation.

Section 70.—For the purpose of carrying out these regulations, inspectors shall have free access to any wharf, vessel, car or to any place where animals may be found.

Section 71.—All inspections for export must be made in daylight.

Section 72.—Owners or shippers of stock during the progress of inspection at any port of exportation shall, with the means at their disposal, give every required assistance to the inspector at such port, and move the animals according to his directions. In case the owner or shipper refuses or neglects to furnish the necessary assistance, the inspector may employ men at the cost of the owner or shipper, and such cost shall be paid to the inspector before a clean bill of health is given.

Section 73.—Any unauthorized interference with animals after inspection, whether by substitution or otherwise, or any other evasion, or misrepresentation, will be deemed a breach of these regulations.

Section 74.—Inspectors may, if they deem it advisable for purposes of identification, mark animals inspected by them. A certificate of inspection, stating the name of the owner, the number, sex and class of animals in consignment and certifying to their freedom from contagious disease, will be furnished by the inspector, and must be produced to the collector of customs before embarkation.

Section 75.—Such animals as may have been exposed to contagious or infectious disease or affected with contagious or infectious disease, shall be detained and dealt with according to orders of the inspector under instructions from the Veterinary Director General.

Section 76.—Inspectors may reject animals for any reasonable cause.

Section 77.—The minister may from time to time order that the provisions of these regulations requiring the inspection and certification as aforesaid, may be waived when in his opinion such action is necessary and desirable.

Section 78.—The collector of customs of any port of Canada whence animals are exported shall not give a clearance to any ship having animals on board for exportation, other than those exempted by ministerial order under the provisions of the preceding section, without having produced to him a certificate, signed by an inspector, to the effect that the animals therein referred to are free from contagious and infectious disease and every way fit for shipment.

INFECTED VESSELS.

Section 79.—Vessels which have carried cattle, sheep or other ruminants, among any of which 'foot and mouth disease' shall have been found, shall be prohibited, for a period of sixty days thereafter, from loading cattle, sheep or other ruminants or swine, in any Canadian port; and, further until such vessels shall have been thoroughly cleansed and disinfected, under the supervision of an inspector or other duly authorized officer.

CUSTOMS OFFICERS.

Section 80.—Collectors of customs throughout Canada shall see that the various exigencies and requirements of the present order, or any ministerial or other order made thereunder, are fulfilled before granting any permit which requires before it is given any act to be performed or any inspection or other proceeding to be made or taken, and they shall see that the prohibitions prescribed and rules established by this order as hereinbefore mentioned, and the instructions which may be issued by the minister, are obeyed, and in case of any infraction of the provisions of the present order, or any of them, taking place, they shall report at once to the minister the nature and extent of such infraction.

GENERAL PROVISIONS.

Section 81.—To provide against the possibility of diseased animals being carried from place to place, through Canadian territory, or conveyed to and shipped from ports, it is ordered as follows:—

An inspection of animals may be made at any place or time by any veterinary inspector under authority from the Veterinary Director General.

Section 82.—Such animals as may be found with or to have been exposed to contagious disease shall be dealt with according to the provisions of the Animal Contagious Diseases Act.

Section 83.—On infectious or contagious disease of animals being discovered on board any steamship, vessel or car, or in any stable, shed, yard or other place, it shall be the duty of the inspector, on the removal of the infected animal or animals, to superintend the thorough disinfection of such steamship, car, stable, shed, yard or other place, without loss of time, in a manner satisfactory to an inspector.

Section 84.—All yards, stables, sheds or other premises used by railway or steamship companies or other persons, for the accommodation of animals shall be maintained in a clean, comfortable and sanitary condition and shall be subject at all times to inspection by inspectors acting under the authority of the minister, who, when they deem such action necessary, may order the cleansing and disinfection in a satisfactory manner of the said yards, stables, sheds or other premises as provided in the Animal Contagious Diseases Act.

Section 85.—In the event of any owner, lessee or occupant of any yard, stable, shed or other premises, or any railway or steamship company or person, refusing or neglecting to carry out the orders of the inspector in regard to cleansing and disinfection as aforesaid or in the event of such owner, lessee or occupant, company or person neglecting to maintain his or its yards, stables, sheds or other premises for the use of animals, in a clean, comfortable and sanitary condition, the inspector may condemn the said premises as unfit for use, whereupon the said premises shall not be used for the accommodation of animals until such time as the orders of the inspector in regard thereto have been satisfactorily carried out.

Section 86.—Stock cars or other vehicles used for the conveyance of live stock shall be cleansed and disinfected at such times and places as the minister may order. Such disinfection shall be done by the thorough cleansing of the car and its subsequent whitewashing with lime and carbolic acid in the proportion of one pound commercial carbolic acid to five gallons of lime wash or such other process as may be approved by the Veterinary Director General.

Section 87.—Shippers may refuse to place their animals on uncleaned cars and may lodge a complaint with the nearest inspector, who shall either cause such cars to be cleansed and disinfected, as above, at the expense of the railway company, or shall prohibit their use until they have been so cleansed and disinfected.

Section 88.—The minister may from time to time make such orders, not inconsistent with the provisions of this order, as may appear to him necessary or expedient.

Section 89.—Any person who violates any provision of this order, shall incur the penalties prescribed by the Animal Contagious Diseases Act.

APPENDIX No. 18.

REGULATIONS UNDER THE COLD STORAGE ACT.

1. The Minister of Agriculture may make appointments of inspectors and other persons for the enforcement of the Act.

2. No application shall be considered for any cold storage warehouses except those equipped with mechanical refrigeration, including the gravity brine system, nor for any place where any such cold storage already exists, or where the proposed cold storage would compete directly with other establishments of the same class.

3. Application for a subsidy under the Act must be made in the following form, which shall be known as Schedule A:—

SCHEDULE A.

APPLICATION FOR A COLD STORAGE SUBSIDY.

To the Honourable
The Minister of Agriculture,
Ottawa.

SIR,—The undersigned hereby makes application, in triplicate, for a subsidy on a public cold storage warehouse to be erected at.....in the province of....., according to the terms of the Cold Storage Act.

The following particulars refer to the proposed cold storage warehouse, namely:—

Particulars.

Size of building, in cubic feet.....
Total refrigerated space, in cubic feet.....
Capacity, in cubic feet, of space, if any, intended for the storage of fish, meats or other goods at freezing temperatures.....
Capacity, in cubic feet, of space, if any, intended for the storage of cheese, eggs, fruit or other goods at temperatures above 30 degrees.....
Number of separate chambers.....
Kinds of material to be used in the construction of the building....
Kind of insulation to be used.....
Kind of goods for which storage at suitable temperatures will be provided.....
System of mechanical refrigeration to be used.....
Capacity of refrigerating machinery, in tons of refrigeration per 24 hours .....
Source of available water supply.....
Estimated cost of building, equipment and water supply, including site..... $.....
Cost of site..... $.....
Will the whole building be used for the purpose of a public cold storage.....
If not, what proportion will be set aside for the public use.....
.....19....

4. Application for a cold storage subsidy shall be made in triplicate on forms supplied by the Department of Agriculture, and the following information, also in triplicate, shall be submitted with each application:—

(*a*) A plan of the warehouse, showing details of the construction.

(*b*) A specification of the insulation, with detailed drawings.

(*c*) A specification of the refrigerating machinery.

(*d*) A sketch showing the location of the proposed warehouse in relation to railways and wharfs.

(*e*) A copy of the rates which it is proposed to charge for storage.

(*f*) The full names of the president and the secretary of a limited liability company, or the full names of all the members of an ordinary partnership, must accompany the application in order to be included in the contract.

(*g*) The authorized capital; the subscribed capital; a list of the subscribers, and the amount subscribed by each, if the applicant is a limited liability company.

5. The rates for storage as originally approved by the Governor in Council shall not be raised without further approval by the same authority.

6. Nothing in these regulations shall prevent owners of subsidized cold storage warehouses from entering into special contracts with customers for the maintenance of temperatures other than those herein specified.

7. The first instalment of the subsidy shall not be paid until the applicant shall have presented proper vouchers for the cost of building, equipment, site and other expenditures.

8. The owners of cold storage warehouses to which the subsidy or any part thereof has been paid, may be required to make an annual report to the Minister of Agriculture in such form as may be prescribed.

APPENDIX No. 19.

EXHIBITIONS.

BRUSSELS, March 31, 1910.

SIR,—I beg to submit the following memorandum of the operations of the Canadian Government Exhibition Branch, for the twelve months ending March 31, 1910.

In the month of December, 1908, according to your instructions, I left London, England—where I had organized the participation of Canada to the Franco-British exhibition held in Shepherd's Bush—and proceeded to Ottawa en route for Seattle, where the Alaska-Yukon Pacific exposition was to be held from April 15 to October 15, 1909, and in which Canada had also decided to participate. After having received your instructions, I left Ottawa for Seattle, where I arrived in the first days of February, 1909.

After the selection of the best spot available for the erection of the Canadian pavilion, we secured the names of several contractors from the director of works of the Seattle exhibition, firms that could be relied upon, and which we invited to tender for the contract of erecting our building. Other firms also sent in their tenders. On February 23, 1909, we opened the tenders and accorded the contract to the lowest tenderers, Messrs. William Dunnavant & Co.

In addition to the general contract for the main building, there was a further contract made with the same contractors for an addition to the end of the building for the Klondyke exhibit.

The following statement is summary of the contractors' account, and shows the various amounts:—

Main contract as per tender	$11,600 00
Additional 12 feet in length	1,138 00
Extra skylights	113 25
Concrete work	196 05
Transformer room	180 96
Men supplied by contractors on interior work	537 09
Klondyke extension	1,550 00
	$15,315 35

We also asked for tenders for the plumbing, which was awarded to Messrs. Borde & Co., whose bill amounted to $1,122.40.

The cost for the installation of the electrical plant amounted to $1,452.05, including the cost of the work for the Klondyke annex. The contract was awarded to the Agutter-Griswald Co., who were much lower than any of the four firms from whom we secured tenders, and they did the work to my entire satisfaction.

In general, I feel that the whole of the work has been carried out very satisfactorily. It was second to none on the grounds from a structural point of view, and no repairs were necessary during the time of the exhibition.

Our pavilion—the interior as well as the exterior—was completely finished for the official opening of the Alaska Yukon-Pacific exposition, which took place on June 1, 1909. We were for this fact complimented by the authorities of the exposition, as well as for the general appearance of our exhibit. The inside decorations were, as usual, for the greatest part made of wheat in order to get an objective illustration of

the fact that Canada was especially a wheat-growing country. Notice boards, profusely placed on view all through the exhibit, gave information to visitors about the country as a whole, its immigration policy, its railways, industries, &c.

A large number of Canadian maps, atlasses, pamphlets, albums, &c., were given to visitors during the fair, and effective advertisement was obtained through this distribution. Several inquiries were made daily dealing with immigration and also commercial matters. I may add that a large number of people informed us of their intention to go and settle in Canada.

Among the distinguished visitors to the Canadian pavilion, I am glad to mention the President of the United States, Mr. Taft, Mr. Wm. Jennings Bryan, several governors of the American states, &c.

His Excellency the Governor General of Canada and Lady Grey, accompanied by members of their family, also visited our exhibit. The Honourable Wm. Pugsley, Minister of Public Works, Honourable Mr. Murphy, Secretary of State, Honourable Wm. Templeman, Minister of Inland Revenue and Mines, and the Honourable Sydney Fisher, Minister of Agriculture, are those of the members of the Canadian government whom we had the pleasure to have with us for a few days.

Our exhibit obtained a great success, a great number of visitors calling every day throughout the whole time of the exposition and expressing their appreciation of Canada's effort in making a fine display of her products and industries.

The exposition closed on October 15.

According to your instructions, I left Seattle at the end of October, 1909, for Ottawa, where I had several interviews with yourself, Mr. Minister, and the deputy minister, Mr. O'Halloran, in connection with our participation in the Brussels exposition to be held this year. After having spent a week in Ottawa, I left for Brussels, Belgium, where I secured the site for the erection of our pavilion. We are now busily engaged in preparing our participation in this exposition, which opens on April 23, and which promises to be one of the largest and most successful universal expositions ever held up to the present time. I have no doubt whatever that our section will be quite complete for the opening day, as everything is well under way and going as well as possible.

The whole respectfully submitted,

WM. HUTCHISON,
Canadian Exhibition Commissioner

To the Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 20.

TOBACCO.

OTTAWA, April 11, 1910.

SIR,—I have the honour to submit a report of the work done by the Tobacco Division, from April 1, 1909, to March 31, 1910.

During the fiscal year 1908-1909, it was decided to establish experimental tobacco stations in the provinces of Ontario (South Essex), and Quebec (counties of Montcalm and Rouville). These stations were established and the seed beds laid out in the first part of the spring of 1909.

These stations have greatly increased the scope of the work of the Tobacco Division in 1909-10.

The Ontario station, which contains about 27 acres, is, to some extent, a small farm, and will be used not only for experimental and practical work in the growing of tobacco, but also for general farming operations, including rotations, with tobacco, as a regular crop, so as to show the value of rotations in tobacco culture. It is hoped that such work will result in a more general adoption of rotations by Ontario farmers, who will thus be in a better position to keep up the fertility of their soils while, at the same time, increasing their profits.

The Quebec stations are much smaller: One contains nine and a half acres and the other seven acres. They are worked on the principle of a three years' rotation (tobacco, grain and clover), but, on account of their small size, they are not suited to general farming operations. They will, however, be very useful as an object lesson of desirable methods.

Tests with fertilizers similar to those carried out on the larger Ontario station have already been made, and the results of the first year's work enable us to reassert the principle already laid down, that the best means to keep up the fertility of tobacco lands and to insure good returns is to use a combination of farm-yard manure and chemical fertilizers. The same conclusions were brought out at the Essex station.

Apart from these three stations, the small experimental field which was laid aside at the Central Experimental Farm, Ottawa, for the growing of tobacco, when the Tobacco Division was established, has been maintained. This field being limited in extent (only about one acre) is reserved for tests of a rather theoretical order. Last year it was used for experiments in the growing of seed plants, continued from the year before.

The seed beds of the Experimental Farm which were laid out with the help of the Dominion Horticulturist, Mr. Macoun, were used for the growing of seedlings required for our work and for various experiments, the results of which are given in bulletin No. A—8. These experiments have shown that wherever hot beds must be used in Canada, as in the province of Quebec, it is always wiser and safer to disinfect the soil of these beds.

The most practical and least expensive, if not the most efficient method of disinfection, is to apply a solution of two and one-half to five pounds of formalin in 50 gallons of water, at the rate of one gallon of the solution per square foot of seed bed. The steam treatment is also very good, but this treatment has a retarding effect on the growth of the seedlings, and, furthermore, few farms are provided with a steam generator necessary for the purpose.

The exact quantity of seed to be sown on a given area of seed bed has also been determined by careful experiments. By following our instructions in regard to this matter, Canadian growers will preserve their beds from the numerous diseases generally due to the excessive closeness of the stand and to lack of aeration. In some springs the damages have been so heavy that the acreage reserved for growing tobacco had to be reduced, owing to the lack of seedlings.

With the co-operation of the Seed Branch of this department we were able to complete the experiment on the growing of seed plants.

The conclusions drawn from our experiments of the previous year were confirmed by a new germination test, made six months after the test mentioned in our bulletin No. A—6. Canadian growers who will chose to follow our methods will no longer have to go to foreign markets for their tobacco seeds. Moreover, by producing choice seed on their own farms, they will be able to maintain, and even to improve the types which are sought after by the manufacturers, and which are known to be the more profitable in our climate.

A comparative study of the different varieties grown from home-grown seeds on the test plot of the Experimental Farm has shown that plants from Canadian seeds are hardier, better acclimatized, more resistant to diseases, while giving heavier yields to the acre. The quality of the product is equal, if not superior.

In fact, an improvement is already noticeable in the shape as well as in the texture of the leaf of at least one variety, the Comstock Spanish, a tobacco suitable for binders, and for fermentation purposes, and which is rapidly being adopted in the province of Quebec.

Although it may not be very remarkable, the result is, however, significant, because, owing to the latitude of the districts where this variety is grown in Canada, opposite results might have been expected. The conclusion to be drawn is that the growing of tobacco is not only possible in certain parts of Canada, but that the products obtained may be of higher quality than some imported tobaccos of the same variety.

STATIONS OF ST. JACQUES L'ACHIGAN AND ST. CÉSAIRE.

The result of our work at these stations, as well as those of the work at the Harrow station, are given in bulletin No. A—9 of the Tobacco Division.

Mr. O. Chevalier, the assistant in charge of the Quebec stations, has given particular attention to seed beds. At St. Jacques station, practical demonstrations were made of the sowing of seed beds. Farmers claimed, at the beginning of the season, that our beds were too thinly sown, but, at the time of setting out, there was an abundant supply of vigorous seedlings, our beds showing a more even stand than the neighbouring ones, which were generally too thickly sown.

A test of chemical fertilizers was also undertaken on the beds of the St. Jacques station.

The average Quebec farmer has difficulty in securing a sufficient quantity of manure for the land, and, sometimes, cannot spare enough for his seed beds.

On the other hand, organic fertilizers applied in too large quantity result in an excess of nitrogen in the soil, and it is then difficult to obtain healthy plants. Therefore it seems quite logical to use chemical fertilizers, but the best method of application and the proper quantity to apply have to be determined. Tobacco growers will find information on this point in the first part of bulletin No. A—9.

The following varieties were grown at the St. Jacques station: Big Ohio, Comstock-Spanish, Cuban and Hazlewood. The area planted in Comstock was divided into plots for the tests of fertilizers mentioned above.

Unfortunately, on August 19, a hail storm injured the crop to such an extent that very little of it was left for curing. The only part spared was a small plot of the hybrid Comstock Sumatra, originated at St. Césaire the preceding year, and grown

for the first time. The merits of this new variety will be further discussed in the report, but we may say here that its superiority over the other tobaccos grown here was easily evident before the hail storm.

The Big Ohio is a heavier yielder than the Connecticut Seed leaf, and we are endeavouring to introduce it in the province of Quebec, to take the place of the latter in the cut tobacco trade. However, the injury from insects was so great that this tobacco had to be reset almost entirely three times in succession, and the growth was therefore greatly delayed. This variety must be harvested early or it will not cure completely before the winter.

Moreover, on account of the large size of the leaves, the tobacco suffered heavily from the hail and lost much of its market value. This test will therefore have to be repeated if we wish to obtain, on the provincial stations, results similar to those obtained at the Central Experimental Farm, Ottawa.

At the St. Césaire station the three following varieties were grown: Comstock-Spanish, Brewer-hybrid and Hazlewood.

The Comstock of St. Césaire are generally more developed and have a finer texture than those of the district of Montcalm. The Brewer-hybrid, a variety recently imported into Canada, is a rather slow grower, but it seems to have become fairly well acclimatized. It may become one of our useful varieties, on account of the good shape and fine texture of its leaves.

At each of these stations, a large number of plants were selected and laid aside for the production of choice seed distribution to the Canadian growers.

HARROW STATION (SOUTH ESSEX, ONT.)

The work of the Harrow station is chiefly devoted to the study of the varieties grown in Ontario. The Burley is the most important of these varieties; but, during the last few years the growing of Virginia tobacco has also received marked attention in this part of Canada. This variety will be submitted to the hot-air process; hot-air curing sheds have been erected at this station for this purpose, and an expert from Virginia has been secured to superintend the curing operations.

Besides the Burley and Virginia, a few Seed leaves were grown at the Harrow station, such as Comstock-Spanish, Big Ohio and Connecticut Seed leaf, as well as the Cuban, Hazlewood and Big Havana. The object was to compare the product grown in Ontario with that of the same varieties grown in the province of Quebec.

The Harrow station has also produced an important crop of Indian corn and oats, grown from selected seed. This will be marketed in the spring of 1910 as seed grain selected under the regulations of the Canadian Seed Growers' Association.

Important experiments in the establishment of seed beds were also undertaken at the Ontario station.

Although the climate of South Essex is comparatively warm compared to that of the Quebec tobacco-growing districts, the experiments undertaken last year show that the grower who wishes to secure good seedlings in proper time, must, like his Quebec competitor, use hot beds.

Owing to the unusually cold spring of 1909, seed beds were a failure on a good many farms in Ontario, and the lack of seedlings compelled many growers to reduce their tobacco acreage. Very heavy losses were thus sustained, considering the high prices at which tobacco sold last winter. These losses could have been avoided, at a small expense, by using glazed frames over the seed beds; such frames last a long time and the expense is thus distributed over a number of years. The conclusions to be drawn from these experiments are presented by Mr. Barnet, superintendent of Harrow station, in the second part of bulletin No. A—9. It is to be hoped that Ontario farmers will follow these suggestions. A test of fertilizers on a one-acre plot of Burley, including a combination of farm-yard manure and chemical fertilizers, resulted in a heavy yield, and a net profit much above our expectations.

The net profit from one of the plots, cost of fertilizers being deducted, is $323.20; per acre; another plot is a close second with $319.20; the other plots yielded cash returns of $249.30, $208.47 and $205.67, respectively. Only one plot, to which neither farm manure nor chemical fertilizers had been applied, fell below $200 ($178.20). This shows conclusively that the Ontario growers must give more attention to the fertilizing of their lands.

There is another question, quite as important and too often neglected: The planning of a rotation of crops, that will avoid the return of tobaccos—especially the Burley variety—too often on the same land. Some Ontario growers, overlooking the importance of crop rotation, have taken from the same fields too many consecutive crops of Burley, and they are now unable to obtain a fair crop of this variety. The soil is exhausted and must now be given up to other less profitable crops.

Judging from the above cash returns, the crop of Burley obtained at the Harrow station was satisfactory, in spite of the unfavourable season of 1909.

We had far more trouble in securing a fair crop of Virginias. The different varieties of this tobacco tested at the Harrow station, and grown from imported seed, made a very slow growth on the field as well as on the bed. Owing to the late growth, it was impossible to set out the seedlings at the proper time (May 25 to June 5). The plants were therefore not ripe enough when harvested in the latter part of August, which is the most favourable period for hot-air curing. Some trouble was experienced in giving the leaf the proper colour owing to the insufficient maturity. The only varieties that gave satisfactory results, so far as the colour of the finished product is concerned, were the Warne and Yellow Oronoko varieties. The Little Oronoko gave undersized products, of very thick texture, which it was almost impossible to ripen properly, although the harvesting was delayed as much as possible, and which after curing by the hot-air process, gave chestnut-coloured leaves of rather poor quality.

A part of our Burley crop which had ripened under exceptionally favourable conditions and which showed a rich yellow colour on the field, was cured by the hot-air process. This lot was the finest coloured of all the tobaccos submitted to this treatment, but the leaves were lacking in elasticity and body.

The conclusion to be drawn from the experiments carried on in 1909 is that, in normal years, it is quite possible to grow Virginias in Essex. The Warne and Yellow Oronoko varieties, when acclimatized, may give products ripening early enough to be harvested at the end of August or at the beginning of September, provided, however, that, by the use of hot beds and glazed frames, the plants are set out very early.

Several manufacturers have taken a deep interest in this year's crop of bright tobaccos, and the problem of finding a market for this product is already solved.

It is, as yet, impossible to state whether the treatment of the Burleys by the hot-air system is profitable. If the products of this variety can be used in the manufacture of yellow tobacco cigarettes, the hot-air curing process may prove advantageous; if not, it will be better to cure them in the ordinray way, as, although a very favourable colour is secured with this process the aroma and the texture are not quite satisfactory.

It will be readily seen that, besides superintending the erection of the buildings, the officers in charge of the experimental stations have done a great deal of work in connection with the growing of tobacco. This work called for the greatest energy and activity owing to the fact that the stations were opened at a late date—latter part of March, 1909. Therefore they deserve great credit for the success so far achieved on these stations.

COMPARISON BETWEEN ONTARIO AND QUEBEC PRODUCTS.

Of course, it is not the intention to compare tobaccos that are, in a way, the special products of the different parts of Canada, as, for instance, the Burleys and

Virginias for Ontario and the small tobaccos for Quebec. But it is important to know definitively the comparative quality of the products used as 'wrappers' that may be grown in each of these provinces, as well as the quality of those used as 'fillers.' It was believed that, on account of the nature of the soil in Essex, the seed leaves grown there would yield a coarser and less elastic leaf than the Quebec leaf.

As to the fillers: Cuban, Hazlewood, Big Havana, it was expected that the Ontario products would have a more aromatic leaf although, perhaps, a little thicker.

In order to secure information on this point, three varieties, Comstock-Spanish, Cuban and Hazlewood, were grown in Essex and Quebec. Owing to lack of space it was impossible to grow Big Havana on our Quebec stations

The products from the different stations were handed to Mr. J. M. Fortier to be treated in his curing establishment recently built at Farnham. At the present time no definite statement can be made as to the value of these products, as their quality will not be fixed until they have remained at least several months further in bales and undergone the curing which must complete the treatment to which they have been submitted. However, a comparative appreciation may be given.

Comstock-Spanish (wrapper type).—The St. Césaire products come first, with a fine, large and elastic leaf. The St. Jacques products have not quite so fine a texture but their chief defect is lack of size, although they are large enough to be used as wrappers. The Ontario Comstocks, not quite so large as the Comstocks of St. Césaire, have a thick leaf, with a strong taste and aroma. The superiority of the Quebec Seed leaf is clearly shown, and this opinion is corroborated by the experts who have helped us to handle the products.

The Big Havana from Ontario gives a thick filler, with a rather strong taste and an average flavour, but this product is hard to cure. In spite of the high temperature to which the bales of tobacco are submitted, the Big Havana leaf is still streaky after undergoing treatment, as though the fermentation had not been sufficient. The Cuban grown in Essex yields an excellent filler, with an agreeable aroma, of average strength. However, the filler grown at St. Jacques l'Achigan is of superior quality, the leaf is not so large, but the aroma is very delicate and the taste light. It is even possible that this Cuban may compete with the fillers of British Columbia, which, as a rule, have a much stronger flavour. This is an interesting problem to solve, whether the growing of Cuban from imported seeds, or from Canadian seeds of the first and second generation, may be profitable in the province of Quebec. It will be profitable only if it is possible to pay the farmer a reasonable price, sufficient to offset for the rather light yield of this variety.

On the other hand, the Hazlewood from Ontario is better than the Hazlewood of St. Jacques l'Achigan. This is a peculiarity which will require investigating, as, at first sight, one does not see why some varieties of filler tobacco give best results in Ontario while other varieties give best results in Quebec, as all these varieties belong to the same type, the Havanensis.

Judging from the foregoing, it seems useless, in the future, to try the growing of light tissue seed leaves in Essex. Owing to the longer season of this part of Canada, which facilitates the curing of a large-sized tobacco, the Big Ohio may perhaps give good results but delicate products; such as the Comstock-Spanish and the Brewer hybrid will have to be grown in the districts of the province of Quebec.

It is about time to mention the Hybrid Comstock-Spanish, which has been grown for the first time in 1909 at our St. Jacques station. This tobacco possesses remarkable qualities. The shape of the leaf is particularly advantageous, and yields a maximum number of wrappers. The tissue is fine, although strong, and the ribs, instead of being prominent, lose themselves in the tissue. Owing to this fact, this tobacco may be used as wrapper in the manufacture of cigars of superior quality, with Sumatra cover. The burning quality is good. The yield in weight per acre is much

heavier than for the Comstock-Spanish, owing to the larger size of the leaf, and, especially, of the larger number of leaves that may be left on the plant at topping time. Besides these qualities, which give it a large place among manufacturing tobaccos, the Hybrid Comstock-Spanish ripens quicker, is more easily and more evenly cured than the Comstock and less liable to rust. While the bottom leaves of the Comstock at St. Jacques station showed numerous spots of rust, those of the Comstock-Sumatra did not appear to be in the least affected. This, particularly, shows that the bottom leaves of the hybrid are more resistant and more elactic than those of the Comstock. In fact, the handling of the small quantity of Comstock-Sumatra that we have harvested has not given practically any waste, whilst in the Comstock the amount of waste was estimated at a minimum of five to six per cent. Under this term 'waste' are included all lower leaves, torn leaves and the texture of which is of a low quality.

During the winter of 1909-10, I was called upon to give an evidence before the Standing Committee on Agriculture and Colonization on the situation of the tobacco industry and of the growing of tobacco in Canada. This evidence gave me an opportunity to let the members of the committee know of the nature of the work of our division and the results obtained. It has been printed as a special publication and is now available for distribution.

A large distribution of choice seeds, the larger part of which was produced at our various experimental stations, was made during the month of May to Canadian tobacco growers who had applied for the same. Our object in distributing selected seeds is, firstly, to improve the types grown in the chief tobacco growing districts; secondly, to do away with the production of common or even inferior tobacco, the output of a number of small farmers, who grow tobacco only for personal use.

I have the honour to be, sir,
Your obedient servant,

F. CHARLAN,
Chief of the Tobacco Service.

The Honourable
The Minister of Agriculture,
Ottawa.

APPENDIX No. 21.

INTERNATIONAL INSTITUTE OF AGRICULTURE

ROME, December 31, 1909.

SIR,—As Canadian delegate to the International Institute of Agriculture at Rome, I have the honour to submit a report of the work done by the institute from April 1, 1909, to December 31 of the same year.

My previous report, ending March 31, 1909, dealt with the organization of the institute, the recruitment and the international composition of the staff. The staff was given the whole month of April to study and prepare a programme of work, and, early in May, the permanent committee proceeded to study the reports handed by the chiefs of the various divisions. The programme of the chief of the second division (World's Statistics, under Mr. Clark) included six great products: Wheat, oats, barley, rye, corn and cotton.

A detailed account of the methods followed in collecting, arranging and compiling the statistics sent in by the forty-eight nations adhering to the institute would doubtless be superfluous; such details are given at length in report of proceedings No. 27, session of May 5, a copy of which was sent to your department.

The elaboration of the programme of the section of plant diseases, in charge of Doctor Saulnier, and of the section of agricultural statistics, in charge of Professor Gilioli, of Pise University, next occupied the attention of the committee. These two sections form part of the second division, and under such skilful management, the best results may be hoped for.

The second division being organized, there remained to work out the programme of the third division (co-operation in all its branches, and wages or farm help). This was found to be very difficult, owing to the lack of statistics on these two subjects in a great many countries and the incompleteness of statistics in others. Co-operative bodies, which were requested to furnish statistics, have failed to do it so far in a manner satisfactory for the institute.

The programme of the third division, planned by its chief, Mr. Braffort, was modified after a lengthy discussion, and a programme less comprehensive and less exacting for governments adhering to the institute was adopted. Mr. Braffort's programme, and the programme adopted by the permanent committee will be found in report of proceedings No. 29, session of May 10, 1909, a copy of which was sent to your department. All divisions of the institute are now organized, and all have started to work. We have now to wait for the results which will be communicated to the General Assembly in December next.

In its session of May 10, the permanent committee admitted the claims made by some countries that they were not adequately represented in the three commissions of the institute, and increased from fifteen to twenty-three the number of delegates in each of these divisions, thus giving a larger representation to the nations of the third, fourth and fifth class.

At the session of March 23, I had the pleasure to present to the institute, the resolutions of the convention on the conservation of natural resources of North America. This convention was held at Washington, U.S., in February, 1909. Canada and Mexico were both represented, having expressed a desire for a World's Congress on this question of conservation. I had hoped if ever a convention was to take place, that it would be held at Rome, in the palace of the institute. Steps were taken with

this object in view, but, unfortunately, Washington had been suggested and accepted and it was found impossible to accept the invitation of the institute. See report of proceedings, No. 25.

The institute being very anxious to make itself known and to show its utility, not only in agriculture but also in all things useful and of prime necessity, would have felt much honoured if these learned men had chosen to meet in its palace. Thus, on May 15, the institute opened its doors to the great organization of cotton spinners, and gave them a magnificent reception. The president of the institute, Count Fama, welcomed the delegation and seized this opportunity to ask for the co-operation of all cotton spinners in the difficult task of compiling official statistics of the world's production of cotton in order to stop speculation on this article of prime necessity, the extraordinary rise in price of which causes so much suffering in the universe. The plan of organization of the library, suggested by Mr. de Podminsky, the librarian of the institute, who, after a tour of investigation, recommended the adoption of the decimal system for the index of the institute and the card system for the classification, was adopted.

As little work remained to be done by the institute, and as my presence, as president of the third commission, was not absolutely necessary, Mr. Esteva, the Ambassador for Mexico and delegate of that country to the institute, kindly offered, as vice-president of the third commission, to take my place at this commission, as well as on the special committee and I left Rome for Canada towards the end of May.

Early in July, the programme of the General Assembly, called for December 12, was communicated to the interested parties, as stipulated in clause 13 of the regulations, and the governments were requested to submit the names of their delegates early in October. The programme, including several technical subjects, the countries were requested to select technical men as much as possible.

I was once more requested by you to represent Canada at this gathering, and, yielding to my request, you gave me as assistant Mr. Archibald Blue, chief of the Census and Statistics of Canada. My object in asking for Mr. Blue was to carry out the instructiotns of the letter of communication, and also, to enable me to discuss fully the technical and complicated questions of agricultural statistics, as exposed in clause 5 of the programme.

The General Assembly, which comprised 107 delegates, met on December 12, at 10 a.m., in the palace of the institute.

Senator Bodio, one of the delegates from Italy, was selected as president, Dr. Theil, one of the German delegates, and Sir Thomas Elliott, delegate from Great Britain, were selected as first and second vice-presidents. The meeting at once proceeded to consider an amendment to clause 13 of the regulations, proposed by Sir John Lavenor, and providing for the admission of the press to the sessions of the General Assembly. This amendment, after being submitted to a sub-committee, and approved by the majority of its members, was almost unanimously adopted by the General Assembly. His Majesty, the King of Italy, honoured with his presence the reception given by the institute at the first meeting of the General Assembly, thus giving a greater solemnity to our meeting and a new proof of the interest which he takes in the welfare of the institute. I had the pleasure of inviting several of our countrymen, who were passing through Rome, thus giving them a unique opportunity of meeting the distinguished founder of the institute, His Majesty Victor Emmanuel III., and the most prominent personages in diplomacy, literature and science.

Although not very bulky, the report submitted to the General Assembly by the institute, represents a large amount of work and research. The first volume, which deals with the organization of agricultural statistics in twenty-two countries, and which has just been published, contains very valuable information; the inventory of the six great products of the world is also a most interesting work, and the Biblio-

graphy, five volumes of which have already been sent to your department, is of the highest value to the agriculture of the universe. The report on the section of agricultural information is also worthy of great praise, as well as the section of plant diseases, which although incomplete as yet, is not without merit.

The report of Mr. de Micklos, Hungarian delegate, on clause 7 of the programme, 'Steps taken by the institute for the protection of birds,' has been much talked of. In seconding the adoption of the report, I had the pleasure to state what we have done, and what we are doing for the protection of useful birds, and I promised the most active co-operation, not only of Canada, but also of our powerful neighbours.

Owing to the lack of statistics, the report of the third division, 'Co-operation and farm help,' was not considered as sufficiently complete to be submitted to the assembly, and the first copies, which were distributed for personal use to the members of the third commission, do not form part of the work of the General Assembly. This assembly, which closed on December 18, was a very great success from all points of view, good harmony and good understanding prevailing all through the meetings, and the discussions, in the various committees, were most instructive and interesting.

In closing this report, I am to express on behalf of all your colleagues at the assembly their regrets of your absence, which made it impossible for them to select you again as president. As new duties call me back to Canada, I resigned as president of the third commission immediately after the close of the General Assembly, thinking it would be in the interest of the institute not to leave this important commission any length of time without a president. I must request you to appoint some one in my place as Canadian delegate to the permanent committee of the institute, and I sincerely regret to have to leave an office which you had entrusted to me and, where, at all times, I endeavoured to advance the interests of the institute and of Canada.

I have the honour to be, sir,
Your obedient servant,

ARTHUR BOYER.

To the Honourable.
The Minister of Agriculture,
Ottawa.

APPENDIX No. 22.

CANADIAN ARCHIVES—REPORT OF THE WORK OF THE BRANCH FOR THE YEAR 1909.

(Extract from the Report of the Minister of Agriculture.)

To the Hon. S. A. Fisher,
Minister of Agriculture,
Ottawa.

Sir,—I beg to submit to you a report of the work of the Archives Branch for the year 1909.

In the month of September the Archives Branch received from the Colonial Office as a gift the following original Despatches relating to Lower and Upper Canada, from 1771 to 1840:—

ENGLAND.

Canada Duplicates.

DESPATCHES.

Volumes No. 1 to 31 have been calendared in the Reports of the Canadian Archives.

Vol.

1. 1771-1782, Quebec, unbound.
2. 1783-1785, Quebec, unbound.
3. 1785-1786, Quebec, unbound.
4. 1786-1787, Quebec, unbound.
5. 1788-1789, Quebec, unbound.
6. 1790, February-July, Quebec, unbound.
7. 1790, September-November, Quebec, unbound.
8. 1791, January-August, Quebec, unbound.
9. 1791-1792, Lower Canada, unbound.
10. 1793-1800, Lower Canada, unbound.
11. 1813, Lower Canada, bound. 1
12. 1814, Lower Canada, bound. 2
13. 1815-1816, Lower Canada, bound. 3
14. 1817, Lower Canada, bound. 4
15. 1818-1825, Lower Canada, bound. 5
16. 1826-1830, Lower Canada, bound. 6
17. 1831, Lower Canada, bound. 7
18. 1831-1833, Lower Canada (Mr. Stuart's Case), bound. 8
19. 1832, January-May, Lower Canada, bound. 9
20. 1832, June-December, Lower Canada, bound. 10
21. 1833, January-April, Lower Canada, bound. 11
22. 1833, May-December, Lower Canada, bound. 12
23. 1834, Lower Canada, bound. 13
24. 1835, January-April, Lower Canada, bound. 14
25. 1835, May-December, Lower Canada, bound. 15

Vol.
26. 1836, January-June, Lower Canada, bound.. 16
27. 1836, July-December, Lower Canada, bound.. 17
28. 1836, Lower Canada (Evidence), bound.. 18
29. 1837, January-July, Lower Canada, bound.. 19
30, 1837, August-December, Lower Canada, bound... 20
31. 1838, January-June, Lower Canada, bound.. 21
32. 1838, July-December, Lower Canada, not calendared, bound.. 22
33. 1839, Lower Canada, not calendared, bound... 23
34. 1840, January-April, Lower Canada, not calendared, bound.. 24
35. 1840, May-December, Lower Canada, not calendared, bound.. 25

Lower Canada Duplicate Despatches.

No. 32 (Vol. 22).

		C.O. 42. Vol.	Pages.
2 July,	1838.—Durham to Glenelg, No. 20..	282	435–438
	Inclosing—		
	Memorial from Ministers, &c.. of Quebec (undated)..	282	443–454
4 July,	1838.—Durham to Glenelg...	282	455
6 July,	1838.—Durham to Glenelg, No. 23....	282	491–494
	Inclosing—		
	Address of Inhabitants of Montreal (1) 13 June, 1838..	282	497–498
	Durham's reply to address of Inhabitants of Montreal (2) (undated)..	282	499–504
12 July,	1838.—Durham to Glenelg, No. 24..	282	505–508
16 July,	1838.—Durham to Glenelg, No. 25..	282	511–518
	Inclosing—		
	Extract from Oswego Palladium, 4 July, 1838..	282	521
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69a. 1801, Minutes of Assembly, Lower Canada (printed) 51
70. 1806, Minutes of Assembly, Lower Canada (printed) 52
70a. 1806, Minutes of Assembly, Lower Canada (printed) 53
71. 1807, Minutes of Assembly, Lower Canada (printed).
71. 1807, Minutes of Council, Lower Canada (ms.).
71. 1807, Shipping Returns, Port of Quebec.
72. 1808, Minutes of Assembly, Lower Canada (printed) 54
72a. 1808, Minutes of Assembly, Lower Canada (printed) 55
73. 1809, Minutes of Assembly, Lower Canada (printed) 56
73a. 1809, Minutes of Assembly, Lower Canada (printed) 57
73b. 1809, Minutes of Assembly, Lower Canada (printed) 58

73c. 1809, Minutes of Assembly, Lower Canada (ms.).
74. 1809–1810, Legislative Council, Lower Canada (ms.).
75. 1810–1811, Legislative Council, Lower Canada (ms.).
76. 1812, February-May, Legislative Council, Lower Canada (ms.).
77. 1812, July-August, Legislative Council, Lower Canada (ms.).
78. 1813, Legislative Council, Lower Canada (ms.).
79. 1828–1833, Assembly; charges against Judge Kerr.
80. 1828–1836, Committee's Reports (printed).

UPPER CANADA.

81. 1798–1799, Executive Council, State (ms.).
82. 1806–1808, Executive Council, Land (ms.).
83. 1807–1811, Executive Council, State (ms.).
84. 1808–1810, Executive Council, Land (ms.).
85. 1810–1811, Executive Council, Land (ms.).

CANADA.

86. 1852, Public Accounts.
87. 1853, Public Accounts.
88. 1854, Public Accounts.
89. 1855, Public Accounts.
90. 1855, Education Reports.
91–91a. 1856, Public Accounts (2 copies).
92. 1856, Crown Lands.
93. 1856, Post Office and Public Works.
94. 1856, Trade and Navigation.
95. 1856–1857, Penitentiaries; Militia.
96. 1856–1858, Education Reports.

CANADA DUPLICATES—SESSIONAL PAPERS.

97. 1857, Public Accounts.
98. 1857, Public Accounts, Trade and Navigation.
99. 1857, Geological Survey.
100 A, B. 1857, Plans to accompany Geological Survey (3 copies).
101 A, B. 1857, Maps (3 copies).
102. 1858, Public Accounts; Trade and Navigation.
103. 1858, Public Works; Crown Lands; Post Office.
104. 1858, Public Works; Crown Lands; Post Office.
105. 1859, Education.
106. 1859, Geological Survey.
107. 1859, Public Accounts; Trade and Navigation.
108. 1860, Public Accounts; Trade and Navigation.
109. 1860, Public Works; Crown Lands; Post Office; Agriculture; Emigration.
110. 1858, Geological Survey.
111. 1861, Public Accounts; Trade and Navigation.
112. 1862, Public Accounts; Trade and Navigation.
113. 1865, Trade and Navigation.
114. 1865, Public Works.
115. 1865, Crown Lands.
116. 1865, Agriculture.
117. 1865–1866, Militia.
118. 1787 (July-October), Shipping Returns (Quebec).
119. 1791, Foucher and Taylor Papers.
120–120a. 1825, Commissioner's Report (2 copies).

Duplicate Sessional Papers.

Vol. 61.

25 Aug., 1766, to 9 Oct., 1766.—Minutes of Executive Council, Quebec (bundle)—C.O. 42, vol. 26; also in C.O. 45, vol. 1.

11 Oct., 1782, to 30 May, 1783.—Minutes of Executive Council: State business—C.O. 45, vol. 4.

17 June, 1783, to 1 May, 1784.—Minutes of Executive Council: State business—C.O. 45, vol. 4.

22 March, 1784, to 29 April, 1784.—Minutes of the Legislative Council of the Province of Quebec—C.O. 45, vol. 4.

16 Nov., 1784.—Minute of Council—Unidentified.

15 to 25 Feb., 1788.—Minutes of Council respecting the Provincial Contingent accounts; inclosed in Dorchester's No. 59 of 27 March, 1788—C.O. 42, vol. 59, p. 17 to 164; also in C.O. 45, vol. 6.

15 to 30 April, 1788.—Minutes of Council: State business—C.O. 45, vol. 8.

20 May, 1788.—Report of a Special Committee of the Privy Council, Quebec—C.O. 42, vol. 60.

26 Dec., 1791.—Extract from the Minutes of Council; inclosed in Clarke's to Dundas, No. 25, of 28 April, 1792—C.O. 42, vol. 90.

Vol. 72.

16 Oct., 1807.—Dunn to Castlereagh, No. 18; inclosing Minutes of Executive Council, 1 June to 18 Sept., 1807; Minutes of Executive Council, Waste Lands (reference wanting), 20 June, 1807, to 25 Sept., 1807—C.O. 45, vol. 42.

21 Jan. to 16 April, 1807.—Journals of the House of Assembly, Lower Canada, in English and French—C.O. 45, vol. 41.

Oct. 16, 1807.—Dunn to Castlereagh, No. 19.

5 July to 10 Oct., 1807.—List of Vessels entered inwards and cleared outwards at the Port of Quebec—C.O. 47, vol. 81.

Vol. 74.

Journals of the Legislative Council, Lower Canada.

27 April, 1808.—Proclamation issued by Sir J. H. Craig—C.O. 45, vol. 40.
14 June, 1808.— " " " " "
23 Aug., 1808.— " " " " "
17 Nov., 1808.— " " " " "
10 Jan., 1809.— " " " " "
14 Feb., 1809.— " " " " "
14 Mar., 1809.— " " " " "

Proceedings of the Legislative Council from 10 April to 15 May, 1809—C.O. 45, vol. 40.

18 May, 1809.—Proclamation issued by Sir J. H. Craig—C.O. 45, vol. 48
2 Oct., 1809.— " " " " "
5 Nov., 1809.— " " " " "
20 Dec., 1809.— " " " " "

Proceedings of the Legislative Council from 29 January, 1810, to 26 February, 1810—C.O. 45, vol. 48.

Vol. 75.

12 April, 1810.—Proclamation issued by Sir J. H. Craig—C.O. 45, vol. 51.
17 April, 1810.— " " " " "
20 June, 1810.— " " " " "
23 Aug., 1810.— " " " " "
8 Oct., 1810.— " " " " "
14 Nov., 1810.— " " " " "

Lower Canada—Proceedings of the Legislative Council from the 12 December, 1810, to 21 March, 1811—C.O. 45, vol. 51.

Vol. 76.

17 April, 1811.—Proclamation issued by Sir J. H. Craig—C.O. 45, vol. 52, pp. 1–200.
28 May, 1811.— " " " " " "
10 July, 1811.— " " " " " "
20 Aug., 1811.— " " " " " "
25 Sept., 1811.— " " " " " "
5 Nov., 1811.— " " " " " "
11 Dec., 1811.— " " " " " "
15 Jan., 1812.— " " " " " "

Lower Canada—Proceedings of the Legislative Council from the 21 February to 19 May, 1812—C.O. 45, vol. 52, pp. 1–200.

Vol. 77.

6 May, 1812.—Proclamation by Sir G. Prevost—C.O. 45, vol. 52, pp. 1–59.
16 June, 1812.— " " " " "
30 June, 1812.— " " " " "

Proceedings of the Legislative Council, Lower Canada, from the 16 July to 1 August, 1812—C.O. 45, vol. 52, pp. 1–59.

Vol. 78.

8 Sept., 1812.—Proclamation by Sir G. Prevost—C.O. 45, vol. 54, pp. 1–125.
27 Oct., 1812.— " " " " "
7 Dec., 1812.— " " " " "

Lower Canada—Proceedings of the Legislative Council from 29 December, 1812, to 15 February, 1813—C.O. 45, vol. 54, pp. 1–125.

Vol. 79.

1828–1833.—Copies of all the Proceedings of the House of Assembly of Lower Canada, and of the Evidence laid before it, relative to the charges brought against the Honourable and Worshipful James Kerr—C.O. 45, vol. 108.

Vol. 81.

2 Jan. to 22 Dec., 1798.—Minutes of the Executive Council on matters of State, Upper Canada; Appendix—C.O. 45, vol. 131, pp. 1–361.
5 Jan. to 25 June, 1799.—Minutes on matters of State—C.O. 45, vol. 131, pp. 1–361.
25 June to 6 Aug., 1799.—Minutes on matters of State—C.O. 45, vol. 131, pp. 1–361.

Vol. 82.

9 Sept., 1806, to 29 Dec., 1807.—Minutes of Executive Council, Upper Canada, on Land matters—C.O. 45, vol. 135.
5 Jan., 1808, to 12 July, 1808.—Minutes of Executive Council, Upper Canada, on Land matters—C.O. 45, vol. 135.

Vol. 83.

Minutes of Executive Council on matters of State, Upper Canada, from the 13 October, 1807, to 5 October, 1811—C.O. 45, vol. 136.

Vol. 84.

Upper Canada—Minutes of Executive Council on Land matters, from the 2 August, 1808, to 26 June, 1810—C.O. 45, vol. 135.

Vol. 85.

Minutes of Executive Council, Upper Canada, on Land matters, from the 1 July, 1810, to 5 October, 1811—C.O. 45, vol. 136.

Vol. 118.

1 July to 1 October, 1787.—List of Vessels entered inwards and cleared outwards in the Port of Quebec (2 returns); inclosed in Dorchester's (Duplicate), No. 39, of 24 October, 1787—C.O. 47, vol. 80.

Vol. 119.

1791.—Papers relative to the complaint of Mr. Foucher, one of the practisers of the Law at Montreal, against M. de Rouville, one of the Judges of the Court of Common Pleas—C.O. 42, vol. 84, pp. 1–417.

1791.—Papers relative to the complaints of Messrs. William and Thomas Taylor—C.O. 42, vol. 85, pp. 1–624.

Vol. 120 and Vol. 120 A.

1825.—North American Provinces; Commissioners' Report; Copy of a Report to His Grace the Duke of Wellington relative to His Majesty's North American Provinces; President, Major General Sir J. C. Smyth—C.O. 42, vol. 208.

ENGLAND.

The transcription of Colonial correspondence relating to Nova Scotia, New Brunswick and Prince Edward Island has been continued during the past year in the Public Record Office. Work has been carried on at the General Post Office, London, the Hudson's Bay Company, Landsdowne House and Edinburgh University. The following volumes have been received through the High Commissioner's Office:—

Public Record Office.

Newfoundland Fisheries—
- Correspondence and Reports, 1782–1814.
- Correspondence and Reports, 1815–1817.
- Correspondence and Reports, 1818–1820.
- Fisheries and boundaries, 1819–1824.
- Fisheries and boundaries, 1825–1841.

Nova Scotia—
- Colonial correspondence, vol. 41, pt. I, 1807.
- Colonial correspondence, vol. 41, pt. II, 1807
- Colonial correspondence, vol. 42, 1808.

Cape Breton—
- Colonial correspondence, vol. 82, 1805.
- Colonial correspondence, vol. 83, 1806

New Brunswick—
- Colonial correspondence, vol. 31, 1826

Prince Edward Island—
Colonial correspondence, vol. 27, 1815.
Colonial correspondence, vol. 28, 1816.
Colonial correspondence, vol. 29, 1817.
Colonial correspondence, vol. 30, 1817.

Shelburne Papers—
American Papers, vol. 45, pt. I, 1741.
American Papers, vol. 45, pt. II, 1745.
American Papers, vol. 46.
American Papers, vol. 47.
American Papers, vol. 50.

Canadian Post Office Records—
Correspondence, 1842–1843, pt. I.
Correspondence, 1842–1843, pt. II.
Correspondence, 1843, pt. III.
Correspondence, 1843, pt. IV.
Correspondence, 1843, pt. V.

Hudson's Bay Company—
Minute Book, No. 10, 1692–1693.

Selkirk Papers—

Vol. 46,	Correspondence,	folios	12603–12900.
47,	"	"	12901–13184.
48,	"	"	13185–13290.
49,	"	"	13291–13548.
50,	"	"	13549–13775.
51,	"	"	13776–13836.
52,	"	"	13837–14182.
53,	"	"	14183–14323.
54,	"	"	14324–14626.
55,	"	"	14627–14860.
56,	"	"	14861–15143.
57,	"	"	15144–15258.
58,	"	"	15259–15470.
59,	"	"	15471–15672.
60,	"	"	15673–16031.
61,	"	"	16032–16499.

Packet of letters of late Lord Selkirk as to emigration, Hudson's Bay, Red River, &c., 1811–1815, preserved in Edinburgh University.

ARCHIVES IN FRANCE.

In the month of July, 1909, Dr. Joseph Edmond Roy, Chief of the Manuscripts Division, proceeded to France to examine the records, and to provide work for future transcription. The report of his work is being printed in a separate volume, which will be distributed during the present year.

The following volumes have been received from France through the High Commissioner's Office:—

Copies of Documents Received from France Since the Last Report.

From the Ministère des Affaires Etrangères:—

Fonds Etats-Unis, vol. 8, Correspondance politique, dépêches du 4 avril 1779 au 22 juin 1779; 1 vol.

Fonds Etats-Unis, vol. 7, Correspondance politique, 3 dépêches, nos 63, 66 et 67, 17 février, 1er mars et 3 mars 1779; 1 vol.

Fonds Etats-Unis, vols. 21 et 22 *re* Pêcheries de Terre-Neuve, 1782; 1 vol.

Documents concernant les pensions accordées aux Canadiens et Acadiens d'après la loi du 25 février, 1791; Archives Nationales, paquets de manuscrits, F. 15, n° 3492; 2 vols.

Received from High Commissioner's office, B. 35, année 1713. Dépêches et ordres du roi; 2 vols.

B. 36, 1714. Dépêches et ordres du roi; 2 vols.

Affaires Etrangères, 1661 à 1688, vol. 5; 2 vols.

Affaires Etrangères, 1779. Fonds Etats-Unis. Extracts from vol. 9, 10, 11, 12, 14, 17; 1 vol.

Bibliothèque Nationale. Fonds français, 6453. Jésuites; 1 vol.

Bibliothèque Nationale. Fonds français, 6569, 7516, 7800, 8082.

Registres de l'état civil Miquelon, 1763-1771; 1 vol.

Liste des Acadiens pensionnés par le gouvernement français, 1791; vol. F. 15, n° 3493; 1 vol.

Affaires étrangères, France, vol. 6 (vol. 3 de Marmette), 1693, 1732.

ORIGINAL MANUSCRIPTS.

A list of autographs brought from France by Dr. J. E. Roy.

29 mai 1638.—Prise de possession par le gouverneur de Montmagny de la concession accordée le 15 janvier 1635 à François de Lauzon par la Compagnie de la Nouvelle-France. Il se transporte à l'embouchure d'une rivière qui est du côté du sud qui descend du lac ou vient proche du lac Champlain qu'il a nommé Saint-François, assisté de Guillaume Hébert, de Jean Bourdon, Nicolas Trevet (représentant de Lauzon). Il se trouve trois îles à l'embouchure de cette rivière. Les dimensions de la sgnie sont dans le titre de concession. Remet la possession à Trevet. Place une pierre au bout d'en haut de la première île avec quatre plaques de plomb marquées d'une croix au pied d'un cycomore sur lequel il grave aussi une grande croix. La rivière Saint-François sert de borne au septentrion—et à l'autre bout une isle nommée Saint-Jean et la rivière nommée Sainte-Marie qui sort au-dessus du Saut Saint-Louis en montant le fleuve Saint-Laurent, à laquelle seigneurie il donne le nom de la Citière suivant le désir de François de Lauzon. D'autant que le rivière Saint-François et l'île Saint-Jean sont incommutables et ne peuvent varier ni changer il n'a pas cru nécessaire de s'y transporter. Fait au fort de Trois-Rivières le 29 mai 1638. Signé par Montmagny, Guillaume Hébert, Jean Bourdon, Nicolas Trevet, etc.

François de Laval, premier évêque catholique de Québec. Nomination de Paul Vachon comme procureur fiscal sur l'île d'Orléans. Pièce signée de sa main, avec le cachet de ses armes sur cire rouge. 10 décembre 1657.

Jean de Quen, jésuite, découvreur du lac Saint-Jean. Lettre autographe datée du 8 février 1652.

Barbe de Boullogne, veuve du gouverneur d'Ailleboust. Nomination de Paul Vachon comme procureur fiscal de la seigneurie d'Argentenaye sur l'île d'Orléans. Pièce signée de sa main avec le cachet de ses armes sur cire rouge. 3 novembre 1667.

Deux brouillons de lettre, de l'écriture de la Mère Ste-Hélène (sœur du jésuite Duplessis), l'une adressée à la duchesse d'Agen et l'autre à la duchesse d'Aiguillon (1751).

Bon écrit sur carton comportant la reconnaissance d'une dette de 900 livres pour quatre compagnies de soldats. Signé par Bonneau. 30 janvier 1760.

Certificat de bonnes mœurs délivré à Adhémar, notaire à Montréal, par Déat, curé de Ville-Marie. 7 mars 1730.

Certificat de catholicité et de bonnes mœurs délivré à Louis Simon Frichet, par Richer, curé de Québec. 26 avril 1756.

Certificat de catholicité délivré à Verrier, procureur général du Conseil Supérieur, par Boullard, curé de Québec. 5 septembre 1728.

31 octobre 1739.—Certificat en latin signé Miniac, vicaire général de Québec, qu'une personne nommée Bouillane n'a jamais été mariée.

17 octobre 1752.—Reçu signé par M. de Muy pour la somme de 2,000 livres en faveur de Vergor, acquéreur d'une maison.

16 juillet 1729.—Inventaire des biens de Alphonse de Tonty, capitaine des troupes de la marine, et commandant au fort de Pontchartrain du Détroit du lac Erié.

Certificat de catholicité en faveur de M. de Courville, employé dans les bureaux du Roi, signé par Richer, curé de Québec. 11 juin 1754.

8 août 1730.—Certificat de catholicité en faveur de M. Cugnet, avocat en parlement, signé par Boullard, curé de Québec.

Copie du contrat de mariage de François Bissot et de Marie Couillard, datée à Québec le 4 octobre 1648. Pièce sur parchemin.

Registre des insinuations de la prévôté de Québec, commençant le 26 mars 1715 et fini le 1er décembre 1717.

Registre des insinuations de la justice de la seigneurie de Notre-Dame-des-Anges. Mars 1756 à 29 décembre 1756.

18 août 1740.—Description des meubles, argenteries, titres et renseignements de la succession de Mgr Pourroy de Lauberivière, évêque de Québec.

Mars 1741.—Vente des meubles ci-dessus.

Copie du contrat de mariage de Barbe de Boullogne et de Louis d'Ailleboust, gouverneur de la Nouvelle-France.

Reçu du jésuite Raffeix, 1687.

Ordonnance de de Meules, 1684.

Procuration Boishébert, 1777.

Rôle des miliciens de Québec, 1776.

Notes sur Saint-Castin.

Les Archives Nationales. Liasse F. 15-3494. Rapports, lettres et états concernant les secours accordés aux Acadiens et Canadiens, en vertu des lois du 25 février 1791 et 9 mai 1792.

Bibliothèque Nationale. Fonds français (n° 8027): Collection des pièces originales sur la marine consistant en lettres, notes, instructions, ordres, ordonnances, projets et mémoires minutés de la main de Colbert et du Marquis de Seignelay, son fils pendant les années 1669-1677.

Bibliothèque Nationale. Fonds français, n° 8028. Même collection et même titre que ci-dessus.

Bibliothèque Nationale. Fonds français, n° 8973.

Recueil de pièces manuscrites et imprimées sur la Compagnie des Indes, depuis son établissement en 1664 jusqu'en 1723.

Bibliothèque Nationale. Fonds français, n° 8036. Histoire des Compagnies de Commerce qui ont été établies en France depuis l'année 1626 avec la collection générale de tous les privilèges qui ont été accordés depuis 1664 tant à ces compagnies qu'à la Compagnie perpétuelle des Indes—par le Sieur Deruis, employé dans les bureaux de la compagnie—1742. Il y a une autre copie de cet ouvrage à la bibliothèque du Service Hydrographique de la Marine, 13, rue de l'Université.

Bibliothèque Nationale. Fonds français, 8038. Mémoires sur le commerce de la France présentés à M. le duc d'Orléans, régent, par les députés du commerce.

Bibliothèque Nationale. Fonds français, 8989. Mélanges. Journal du voyage de la Louisiane fait par le Sieur Bernard de la Harpe et des découvertes qu'il a faites dans la partie de l'ouest de cette colonie (1716-1722).

Copie de pièces tirées de F. 15—3194, Archives nationales.

Etat des sommes dues aux Acadiens, an 7 de la République, arrondissement de Morlaix (Finistère).

Etat supplémentaire des Acadiens et Canadiens résidant dans la Charente inférieure qui ont droit aux secours en vertu de la loi de 1791; 2 vols.

Acadiens du district de Saint-Malo—1792.

Ministère des Affaires étrangères. Mémoires et documents. Fonds Amérique. Vol. 7. 1713-1734. 1re partie.

BRITISH COLUMBIA.

Under an arrangement with the Government of British Columbia, copies of all documents acquired by the Provincial Archives are sent to this branch. During the past year the following journals and letters were received:—

Journal of John Stuart, Rocky Mountains, December, 1805.
Letter from Simon Fraser to Jas. McDougall, December 21, 1805.
Journal of Henry Atkinson Tuzo, 1853.
Letter from William Todd, York Factory, 1829.
Letters from Archibald McDonald, 1830.
Letters from John Work, Fort Victoria, &c., 1828–1849.
Miscellaneous correspondence of Wm. Tolmie, Duncan Finlayson, Dugald McTavish and others, 1854–1855.
Miscellaneous correspondence of Wm. Tolmie, Duncan Finlayson, Dugald McTavish and others, 1857–1858.
Minutes of the Legislative Assembly, Vancouver, 1856–1858.
Minutes of the Legislative Council, Vancouver, 1853–1858.
Minutes of the Legislative Assembly, Vancouver, 1861–1863.
Minutes of the Legislative Council of British Columbia, 1864–1868.
Letters of the Speaker of Legislative Assembly of Vancouver Island, 1856–1859.
Correspondence of Sir James Douglas, 1839.
Voyage to Sitka, 1841–1843.
Trading Voyage, 1840–1841.
Miscellaneous correspondence, 1850–1864.
List of Commissioned Officers of Hudson's Bay Company, and division of shares, showing death or retirement, from 1821–1851, and half shares of retired officers to 1858. Letters from officers in charge of Norway House, 1830.

DEPARTMENT OF INDIAN AFFAIRS.

From the Department of Indian Affairs the following deeds of surrender and agreements with the Indians have been received:—

No. 404. October 12, 1898. The New England Company to the Crown.
No. 406a. October 29, 1898. F. M. Joyal and others to the Order of the O.M.I. in British Columbia.
No. 406b. November 11, 1898. The Order of the O.M.I. to the Crown.
No. 410. January 13, 1899. William Kempte and wife to the Crown.
No. 411. January 26, 1899. Estate of Patrick Russell to the Crown.
No. 412. March 7, 1742. Jesuit Fathers to the Huron Indians of Lorette.
No. 413. February 26, 1794. Jesuit Fathers to Huron Indians of Lorette.
No. 419. December 1, 1898. John Hammond and others to the Crown.
No. 420. July 23, 1892. Theo. Jean Lamontagne to the Crown.
No. 428. 1889. Treaty 8 and adhesions (4).
No. 431. May 31, 1894. Certificate of title.
No. 434. May 12, 1900. Alex. E. Kennedy and wife and the New England Company to the Crown.
No. 459. July 7, 1902. Agreement between Counsel for the Dominion and Province of Ontario *re* Treaty Indian Reserves in Ontario.

No. 470. 1902. Agreement between Indians of Heatherton and Alex. McDonald and Duncan A. Chisholm.

No. 471. Deed, Alex. McDonald and Duncan A. Chisholm to the King. Deed of right-of-way for Indians at Heatherton.

No. 474. Deed of Sale by the Maniwaki Driving Club to His Majesty King Edward VII. in trust with the River Desert Band.

No. 482. Deed of Sale, William Scott to the King.

No. 483. March 7, 1902. Robert Cunningham to His Majesty King Edward VII.

No. 463. Duplicate certificate of title, pt. lot 7, Morleyville.

MISCELLANEOUS.

Documents and Manuscripts received from different sources.

Various printed and typewritten documents relating to railways and British Columbia. 1 vol.

Rebellion of 1869–70. Copies of evidence. Received from the Finance Department.

Marriage License Registers. From 1858-1867. From Finance Department. 2 vols.

Bonds, Clerks and Bailiffs Division Courts, Upper Canada. From Finance Department. 1 vol.

Report of Indemnity Commissioners, 1838-1840. From Finance Department. 1 vol.

Register of the Shareholders in the Welland Canal Company, 1830–1846. From Finance Department. 1 vol.

Criminal Justice Accounts, Upper Canada, 1865–1868. 1 vol.

Criminal Justice and Fee Funds, 11 July, 1856–31 December, 1869, Upper Canada. 1 vol.

Index Returns of Ratepayers, Municipalities Fund, Upper Canada, 1855-1859; 1860-1863; 1864-1867; 1861-1865; 1866.

General Fee Fund, 1862–1865, Upper Canada. 1 vol.

Militia General Accounts, 1 July, 1857–30 June, 1838. 1 vol.

Militia General Accounts, July, 1869–June, 1870. 1 vol.

Register of Town Major's Office, Quebec, 1838. From Militia Department.

Report of the state of the Militia, &c., signed by Allan McNab, &c., Quebec, 1855. Original from Militia Department.

Orderly Book, 1783, from Mrs. Foran, Ottawa. To be returned after copying.

Received from the Crown Lands Department, Toronto:—

Copy of the minutes of the Land Boards for the Eastern and Ottawa districts, 1820-25.

Lands granted to militiamen by the land board for the district of Johnstown.

Lands to the U.E. Loyalists, Bathurst district.

Location of emigrants, Bathurst district.

Land board, New Castle district, and alphabetical index of names accompanies these lists.

From the office of the Governor General's Secretary:—

Bundles of Despatches, 1845–1866.

Twenty-nine letters of John Richardson, 1780-1840. From H. R. Howland, Buffalo, New York. To be returned after copying.

From R. A. Pringle, Cornwall, as a gift to the Archives, the following documents and publications:—

Proceedings of the House of Assembly, Upper Canada, 1835. (Pamphlet.)

Reminiscences of the Rt. Revd. Alex. McDonald, 1888. (Pamphlet.)

Rules of the Law Society, Upper Canada, and Standing Orders in Convocation, 1880. (Pamphlet.)

York Almanach and Calendar, Upper Canada, 1824.
Toronto Almanach, 1834.
Orderly Book, Capt. Saml. Anderson, 1799 (mss.).
Montreal Almanach, 1819.
York Almanach and Provincial Calendar, 1821.
Almanach, 1838.
Army Lists, 1798-1811, 1825 and 1837.

Received from Mrs. Corbett to be copied:—
One account book, J. Pringle.
Package of military papers, 1839.
Orderly Book, Cornwall Infantry, 1866.
Orderly Book, Cornwall Artillery, 1838-39.
Orderly Book, Cornwall Artillery, 1866.
Diary of J. Pringle, 81st Regiment, 1813-16.
Bundle of newspapers, history of Glengarry county, by G. E. McDonell.

Copy of Registers of General Quarter Sessions, 1802–1816. 2 vols.

Index to warrant book, regulations, 1 January, 1820. From Crown Lands Department Toronto.

List of Surveyor General's locations, from November, 1807, to March, 1811, Upper Canada. 1 vol.

Commission of James Gray, of Kingston, as Notary Public, signed by Sir P. Maitland, 17 April, 1822.

Commission as Surgeon to George Parsons, Toronto, signed by Sir G. Arthur, 5 April, 1839.

Sketch of road from Prince Arthur's Landing, Thunder Bay, Lake Superior, to Lake Shebandowan, as traversed by the Red River Expedition force. Surveyed by Capt. G. L. Hughes, Rifle Brigade, 20 July, 1870.

From Dr. Thorburn, Ottawa:—
Nine volumes documentary history of Upper Canada.

Received from St. Regis.—Copy of register of parish of St. Regis, 1764.

Copy of register, Quarter Sessions, Eastern district, 1789-1802.

Received from Sir Wilfrid Laurier:—
Autographs of Papineau, Pelletier, Perrault, T. S. Brown, Wolfred Nelson.

Received from Quebec.—Inventaire des documents historiques conservés aux archives de la province de Québec, by Father O'Leary.

Copy of the registers of the Court of Common Pleas, Montreal, 1764–68.

One account book of John Halsted (1765-1775) from Quebec, 75 pages.

Small book of account of John Halsted, 1767-68.

Sheets of account of John Halsted, Quebec book of wages, 1767-69.

Recensement du gouvernement de Québec, 1762. Copié aux archives du Séminaire de Québec.

Copie du registre des minutes du tabellionnage de l'île de Montréal, par Basset, 1644-1662. Copié au greffe de Montréal.

Copie des registres des baptêmes de Notre Dame de Montréal, 29 septembre 1657 à 28 janvier 1669.

Catalogues de ceux qui ont été confirmés en 1664.

Enfants baptisés chez les Hurons, par le P. Poncet, 1646.

Prévôté of Quebec; pages 751 to 1132; years 1715 and 1717

Reçu de Québec, les pages 1133 à 1451 des archives de la prévôté de Québec, comprenant août à octobre 1757.

Reçu de la fabrique de Montréal "Registre des baptêmes, mariages sépultures de la paroisse de Notre Dame de Montréal, 1642-1700.

Terrier de la seigneurie de St-Augustin (de Maure).

Index alphabétique de noms, 1754.

Terrier de la Seigneurie St-Ignace ou la Petite Rivière.

Index de noms.

(From the Archives of the Hôtel-Dieu, Quebec.)

Documents relating to Sir George Cartier:—

His election in Provencher, 1873.

His defeat in Montreal East.

The offer of l'Assomption County by Louis Archambault.

His Commission as Minister of Militia.

His Commission as Attorney General.

Letter from Bishop Rogers of Chatham relating to the projected route of the I.C.R., 1869. Received from Mlle. Thérèse Surveyor, of Montreal, through Mr. Wm. McMahon, Assistant King's Printer.

Four manuscript journals of Samuel Bridges, Montreal, 1809. (From Mr. Birch, Ste-Anne de Bellevue.)

Received from Dr. Hannay:—

Warrants of surveys, New Brunswick, 22 May, 1786–28 September, 1788.

Copy of inscriptions in country cemeteries.

Copies of inscriptions on tombstones in old St. Peter's graveyard, St. John, N.B.

Inscriptions on the tombs of Fernhill cemetery, St. John, N.B.

Copy of inscriptions in old Catholic cemetery, St. John county, N.B.

List of commissioned officers of Hudson's Bay Company, &c., 1821-51. Book containing letters (copies) from officers in charge of Norway House, 1830, and loose copies of letters. Received from Isaac Cowie, Land Agent, Winnipeg.

Letters addressed to the Editor of the *Canadian Courant*, by a creditor of the agents of the North-West Company, 1830.

From Mr. C. Powell, Hanwell, England (through Sir Wilfrid Laurier):—

Roll of payments to Colonies, 1781. (Parchment.)

The Court and City: or, Gentleman's complete annual Kalendar for the year 1809, containing lists of both Houses of the 4th Imperial Parliament of Great Britain, which met for the 1st session in June, 1807; the Court register; lists of the army, navy, universities, public offices and hospitals. Printed in London.

Received from London:—

The Royal Kalendar, or Annual Register for England, Scotland, Ireland and America, year 1781. Printed in London.

Bibliographies de Haldimand et Bouquet (Extraits de l'Histoire militaire de la Suisse dans les différents services de l'Europe, tome 7, Lausanne, 1873).

SESSIONAL PAPER No. 15

LIST OF PLANS, MAPS, &c., RECEIVED IN THE MAP ROOM OF THE DOMINION ARCHIVES DURING THE FISCAL YEAR ENDING MARCH 31, 1910.

Date.	No. of Plans.	Title.	Source.
1909.			
Apr. 1	1	Township of Sarnia	Privy Council.
" 2	1	Part of Simcoe	"
" 2	1	Village of Simcoe	"
" 2	1	Niagara	"
" 2	1	Chaudière Falls	"
" 3	1	Owen Sound	"
" 3	1	Purchase from Indians, Huron district	"
" 3	1	Plan of road from Toronto to Saugeen	" (Hawken's).
" 5	1	Townships round Burlington Bay	"
" 5	1	North Gwillimbury	"
" 5	1	Drummond location	"
" 6	1	Letter O, Ottawa	"
" 6	1	Water Lot, Toronto Bay	"
" 7	2	Maps of Burlington Bay	"
" 7	1	Island adjacent to Brockville	"
" 7	1	Land on River Sydenham	"
" 7	1	Owen Sound	"
" 13	2	Maps of part of Canada, 1790	Col. Correspondence.
" 14	1	Part of Stamford Township	Privy Council.
" 14	1	Country between St. Lawrence and Ottawa	"
" 14	1	Part of Stamford	"
" 15	1	Township of Meaford	"
" 15	1	Lot H Nepean, Rideau Canal Ld	"
" 19	2	Stamford	"
" 23	19	Maps of Forts, &c., in Acadie, accompanying Franquets journal	F. series.
June 3	1	Topographical Map, Thurso sheet	Militia and Defence.
" 3	1	Topographical Map, Hawkesbury sheet	"
" 3	1	Topographical Map, Alexandria sheet	"
" 4	1	Prince Edward Island	Library.
" 4	1	Carte de la Nouvelle France	Genest.
" 4	1	Relative position of the St. Maurice and Canton Forges., (Crown Land Department)	Official.
" 5	1	Portion of Mitchells Map, eastward 75° long. n. of 42° lat	Library.
" 5	1	British Colonies in North America	"
" 9	4	Maps prepared and issued by the Geological Survey of Canada	Distribution Office.
" 16	1	Plan La Nouvelle France ou Canada	Bellin, 1755.
" 19	1	S. Flemings Chart accompanying report on proposed I.C.R.	State Papers.
" 19	1	Proposed Port Routes, British America and West Indies, 1866	"
" 19	1	Part of Huron and Ottawa Territory	"
" 23	1	Part of the Huron Tract	Privy Council.
" 25	1	Showing Town plot of Newcastle	"
" 25	1	Plan of Cockburn Island	"
" 26	1	Road from Prince Arthur to Shebandowan	State Papers.
July 30	1	Carte de l'Acadie No. 113	Depot des Fortns.
" 31	551	Maps as per separate list	Public Works.
Aug. 3	1	Otonabee Township	Surveyor General.
" 3	1	Chippewa Lands	Correspondence.
" 3	1	Hospital Reserve, Town of York	"
" 10	1	Plan du Palais Episcopal, Quebec	Public Works.
" 11	1	Hospice de Quebec en 1692	"
Sept. 1	1	Ottawa Railway Terminals	Geo. Kydd.
" 2	1	Roads near Halifax	Military Papers.
" 2	65	Various departmental maps, Canadian	"
" 2	26	" "	"
" 3	50	Transvaal and Orange Free States	"
"		Intelligence office maps	"
" 7	1	Cataraqui Harbour	Privy Council.
" 7	1	Kingston "	Papers.
" 8	1	Water Powers of Canada, 1899	Royal Socy. of C.
" 8	93	Maps showing development of Canada	Dept. of Interior.
" 13	1	Plan of Townships, Red River Territory	R. E. Young, D. of I.
" 13	1	Plan N. W. T. proposed surveys	" "
" 14	1	Part of St. Lawrence	Privy Council.
" 14	1	Situation, Town of Newcastle	"
" 14	1	Bonaventur, 1765	Col. Correspondence.
" 14	1	Quebec, &c. (5 sheets), 1791	"
" 14	1	Key to "	"

LIST OF PLANS, MAPS, &c., RECEIVED IN THE MAP ROOM, &c.—*Concluded.*

Date.	No. of Plans.	Title.	Service.
1909.			
Sept. 14..	1	Chart of World, 1886	Agriculture Dept.
" 15..	1	C. P. R. construction	Caron Papers.
" 15..	1	Canada showing Trails, 1885	"
" 15..	1	C. P. R. proposed routes	"
" 17..	1	York Harbour	Privy Council.
" 17..	3	Quebec, 1815	R. F. O'Leary.
" 20..	1	Part of Township of Brantford	Privy Council.
" 20..	6	Quebec (Evêché, &c.)	Public Works.
" 21..	1	Part of York	Privy Council.
" 22..	1	Part of Niagara	"
" 22..	1	" "	"
" 25..	1	Plan of Roads at Barrie	"
" 28..	1	Harbour of Quebec. Wallace, 1861	Public Works.
Oct. 16..	1	Map showing Telegraphs, Trails, &c., N.W.T.	Bailliargé.
" 16..	1	Seigneurie de Longueuil	E. T. Wilkie, C.E.
" 16..	1	Topographical Map. Cornwall Sheet	Militia and Defence.
" 21..	1	Railway from Halifax to the Pacific	State Papers.
" 21..	1	Photo copy of Jumeau Map.	Dr Ganong.
" 26..	1	Arctic Regions. Peary and Cook Explorations	Matthews, Buffalo.
" 28..	1	Travels of Capt. Pond of Milford	Yale University.
" 28..	1	Quebec. Proposed Cove, Fields Ave	Hugh O'Donnell.
Nov. 3..	5	Plans of Jesuit Barracks, Quebec	State Papers.
" 15..	1	Yukon. Whitehorse Copper Belt	Mines Department.
" 15..	1	" " "	" "
" 15..	6	" " "	" "
" 16..	1	Map of Klondike. Portion of British Columbia	Lands and Works, B.C.
" 16..	1	Canadian Yukon and Northern British Columbia	Public Works, B.C.
" 17..	1	British Empire in its true proportions	Scot. Geo. Mag.
" 18..	1	St. John River. C. Morris, 1788	Col. Correspondence.
" 18..	1	Bay and Port of Passamaquoddy. C. Morris, 1784	"
" 18..	1	Canadian Irrigation Canals	Dept. of Interior.
" 18..	1	Sketch Map of fire patrols in N.W.T.	" "
" 18..	1	Riding Mountain Forest Reserve	" "
" 23..	37	Map by Quebec Bridge Commission	Distribution Office.
" 30..	1	Annapolis River	Library of Congress.
Dec. 3..	1	Northwest Part of Canada, 1857.	M. Cauchon.
" 4..	32	Plans of Public Works (as per list)	Public Works.
" 4..	6	" "	" "
" 18..	4	Maps published by the Geological Survey	Distribution Office.
1910.			
Jan. 4..	1	Kaministiquia River, enclosed Plan of Thunder Bay	State Papers.
" 8..	1	Topographical Map. Vaudreuil Sheet	Militia and Defence,
" 8..	1	" " Lachine "	" "
" 8..	1	" " Laval "	" "
" 8..	1	" " Huntingdon "	" "
" 8..	1	Paris, 1530. Plan dit aux Trois Personnages	Mr. J. E. Roy.
" 8..	1	Paris, 1615. Mathieu Mérian.	"
" 8..	1	Funeral of Anne of Austria	"
" 13..	1	Quebec and Plains of Abraham, 1791	Col. Correspondence.
" 13..	1	North Shore of Lake Erie, Grand River	" "
Feb. 1..	4	Plan Laundry at Provincial Lunatic Asylum	K. Tully.
" 22..	1	Grande Baie de St. Laurent. Jumeau	F. O'Leary.
Mar. 22..	1	Telegraph Map. Dominion of Canada, 1882.	J. Aubé.
" 22..	1	Cross and Crescent War of 1877	Harper.
" 22..	1	Part of District of Nipissing, Ontario	Can. Almanac, 1910.
" 26..	2	Maps of Bermuda.	Col. Correspondence.
" 26..	2	Maps of New Brunswick	" "
" 30..	1	Plan of Credit River Reserve.	" "
" 31..	10	Plans with Annual Report of Railways and Canals	" "
" 31..	1	Northern Alberta	Dept. of Interior.
" 31..	1	New Brunswick	Senator Poirier.
" 31..	1	Topographical Map of Canada. Montreal-Quebec Sheet	Dept. of Interior.
" 31..	1	Sketch of Peninsula of Halifax, received 15.1	Col. Correspondence.
		In all 1,036 Maps.	

SESSIONAL PAPER No. 15

LIST OF BOOKS, MAPS, PLANS, &c., &c., RECEIVED FROM THE DEPARTMENT OF PUBLIC WORKS, JULY 31, 1909.

No. of Maps.	Books.	Date.
36	Plans, Elevations and Details of Public Improvements, Province of Canada	1844
3	Loose enclosed	1844
8	Admiralty Charts, Ontario	1844
17	Plans officiels des Comtés d'Hochelaga et Jacques-Cartier	1876
32	Cadastral Plans of the Parish of Montreal (Book 752)	1878
40	Cadastral Plans of City of Montreal (751)	1874
18	Public Works of Canada. (Photos)	1843
5	Maps, Reports, &c., Canal, St. Lawrence to Lake Champlain, 2 copies (1 French duplicate)	1856
19	Bayfield's Charts of River St. Lawrence. Admiralty Charts	1860

LIST OF BOOKS, MAPS, PLANS, CHARTS, &c.

Date.	No. of Plan.	Title.	Compiler.
1879	1	St. Irenee, Charlevoix Co., P.Q.	S. Derbyshire.
1879	4	Ste Famille, Island of Orleans	F. N. Hamel, Cons. Eng.
1876	5	Plan showing position of Cut at River Blanche, P.Q.	W. Kingsford, Eng. in C.
1878	6	Plan d'une partie de la Rivière Richelieu vis-à-vis les villages St. Antoine et St. Denis.	Plan accompanying report of G. F. Baillairge.
1876	16	Quarantine Station, Grosse Isle	W. Kingsford.
1878	19	St. Jean Port Joli, L'Islet Cy., P.Q.	S. Derbyshire.
1879	25	Magdalen Islands, Basin Bay	C. F. Roy, P.L.S.
1879	27	" " Etang des Caps	" "
1879	28	" " House Harbour.	" "
1856	33	Sketch of Soundings in R. Yamaska from St. Aime to the St. Lawrence.	J. Page.
1870	34	Plan of Property of L'Assomption Lumber Co., known as 'Petite Ile' in the Parish of Lachenaye.	H. M. Perrault.
	47	Lachine Canal	J. Page.
1861	52	Map of the District of Gaspé and parts of the County of Rimouski. Dep. of C. L.	Andrew Russell.
1873	53	S. W. portion of Province of Quebec from Location Surveys, G.T.R., and projected South Shore Ottawa Railway and the De Beaujeu and other Seigneurial Maps.	W. Kingsford.
1879	55	Magdalen Islands and Surrounding Fishing Grounds, from Bayfield Surveys.	C. F. Roy.
1879	64	Plan of Perce Bay, Gulf of St. Lawrence	F. N. Hamel.
1874	66	Head of Lake St. Louis, showing accumulation of ice, 5 May, 1874.	J. S. Tache, jr.
1872	75	Plan showing proposed hydraulic improvements in Richelieu River near Chambly Canton.	Accompanying report of Charles Legge.
1872	76	Plan No. II of above	"
1872	76	Profile of above	"
1872	76	Detail of dam and flume	"
1857	79	Plan proposed mill sites, &c., Coteau du Lac	G. F. Baillairge.
1857	80	Map of Cross Sections, &c., Cedar Village	"
1857	81	Proposed mill sites, &c., in vicinity of old Canal opposite Split Rock.	"
1857	82	Cross Sections, &c., St. Lawrence & Ottawa Canal Cascades.	"
1872	91	Culbute Rapids to Lake Coulonge	From Kingsford's Map.
1878	93	Entrance of Monk Channel, St. Lawrence	{ U. Valiquet. { W. Kingsford.
1862	100	Malbaie and Grand Baie Road Appendence No. 3, avec 'Remarques au sujet des principales lignes de Chemins.	Voir mon rapport date le 18 Sept., 1862. G. F. Baillairge.
1872	123	Front of Certain Tracts of Land in the Seigniory of Cap de la Madelin on the River St. Maurice, prop. of H. Ogden.	By order H. R. Symnes. E. J. Harkin, Sec.
1877	134	Plan de la ville de St. Jean. Copy of Cadastre	F. X. Maillot.
1863	142	Plan of River Richelieu, 1858 of the Rapids 1863.	N.S.
1858	154	Part of City of Montreal, showing existing harbour and proposed improvements.	With report of J. S. Trautwine.

LIST OF BOOKS, MAPS, PLANS, CHARTS, &c.—*Continued.*

Date.	No. of Plan.	Title.	Compiler.
1875	155	Proposed improvements, mouth of St. Charles River.....	(*A*) G. F. Baillairge.
1875	155	" " " "	(*B*) "
1875	155	" " " "	(*C*) "
1843	160	Sketch of the Gaspe Roads.....	A. J. Russell.
1860	201	Gulf of St. Lawrence, Pictou Harbour. Ad. Chart.....	With Report of 10th Aug., 1872.
1872	201	Plan showing depth of water on The Bar at entrance to Pictou Harbour.	Alex. MacNab.
	203	Cedars Canal Survey, Cross Section.....	
	203	" showing soundings.....	
1855	205	Lake St. Peter. Enlarged from Bayfield, showing Dredging operations, and Winter Survey on the Ice for Harbour Commissioners.	Hon. John Young, Ch. E. Th. C. Keefer, Eng.
1855	206	Chart of portion of River St. Lawrence between Montreal where improvement is required for navigation of 20 feet at low water. Enlarged from Bayfield.	By Order of the Harbour Commnrs., Montreal. T. C. Keefer, Eng.
1877	210	Skeleton plan of the Upper Ottawa.....	R. Steckel.
1846	211	Proposed Landing Pier, St. Michel.....	
1879	212	Mouth of St. Maurice River.....	G. F. Baillairge.
1877	213	Sketch of Sounding taken in River Saguenay in October and November, 1877.	
1879	218	Baie des Chaleurs, Caplan. Plans, soundings and proposed Breakwater.	C. F. Roy.
1873	222	Plan of Isle aux Cochons.....	E. J. Harkin.
1872	234	Plan of Proposed Retaining Boom at Rivière des Prairies...	J. F. Gandet, P.L.S. & C.E.
1847	257	Landing Piers Below Quebec. I. I. of Orleans.....	James Stewart.
1847	257	" " II. Cap St. Ignace.....	"
1847	257	" " III. Crane Island.....	"
1847	257	" " IV. Kamouraska.....	"
1847	257	" " V. Point aux Pères.....	"
1847	257	" " VI. Malbaie.....	"
1847	257	" " VII. St. Iréné.....	"
1847	257	" " VIII. Les Eboulements.....	"
1847	257	" " IX. Baie St. Paul.....	"
1847	257	" " X. Chateau Richer.....	"
1846	275	Proposed Landing Pier at Berthier.....	F. P. Rubidge.
1732	280	Carte d'une Exploration Faite en 1732 par comprenant Les Rivières Chemerichane Lac K.	J. L. Normandin, Arpenteur du Roy.
1858	292	Map of Kempt Road, and of proposed New Road from Ste. Flavie to Lake Metapediac, and of a portion of Major Robinson's Line of Railway from Quebec to Halifax.	G. F. Baillairge.
1858	294	Plan d'une partie de la Rivière St. Maurice près de la Chute la Grand Mère et des Terrains environnant la dite Chute faite à la requisition de H. R. Symmes, Ecr.	Hil. Legendre, Ap.
1784	320	Carte d'une Partie des Côtes du St. Laurent, là ou est située la seigneurie de Mingan et celle des Isles et Islets de Mingan. Le tout compilé et dressé sur les Cartes de la Marine. Faites sous la direction de MM. James Cook, célèbre navigateur, Michel Lane et de Granchain, etc., etc.	Au dépôt général des Cartes, Plans et Journaux de la Marine, Paris. Certified copy.
1866	355	Plan of St. Helen's Isle, Montreal, from a Survey in 1865-6 by Lieut. H. S. Sitwell, R.E.	W. Matt. Noble, Capt. R.E.
1839	362	Plan and Section of proposed alteration of the Bridge and Road opposite Fort Coteau du Lac.	P. Fleming.
1839	363	" " "	"
	367	Plan and Section of two Routes for Section B. of the Rouge Hill, McAdamize Road.	R. A. Maingy, C.E.
1845	374	Plan of the Rouge Hill with the several lines of Road	
1845	375	Sections through Rouge Hill.....	James Lyons.
1855	376	Map of Rouge River showing proposed Bridge site and alteration of highway.	Arch. McDonald, C.E.
1862	390	Plan of the Townships of Assemetquagan and Casupsall....	A. Russell, A. Com., C.L.D.
1815	469	Plan of Proposed Bridge over the St. Maurice.....	L. Dumont.
1843	472	Plan of a Bridge Site on the River Rimouski.....	A. J. Russell.
1847	492	Sketch of the Exploration Line of the St. Lawrence and Champlain Canal.....	J. B. Mills, C. E.
1790-1814	493	Plan of Part of the River Richelieu shewing the owners of lots round Chambly.....	Louis DeRamezay.

LIST OF BOOKS, MAPS, PLANS, CHARTS, &c.—*Continued.*

Date.	No. of Plan.	Title.	Compiler.
1830	494	Plan of Obstructions in the Navigation of the River Richelieu above and below St. Ours	Aug. Keefer, A.C.G.
1826	499	Quebec and its Environs. (Survey of 1822)	John Adams.
1852	508	Plan of the Town of Montreal, showing new projects of embellishment. True copy of part of Charland's plan	Bouchette.
1861	512	Map of the Counties of Terreborne, Two Mountains and Argentueil	A. Russell, Dep. of C.Lds.
1862	513	Plan of Part of the St. Maurice Territory	Dep. of Cr. Lds.
1862	514	Counties of Ottawa and Pontiac with Colonization Roads	"
1862	517	Map of Part of Eastern Townships with Colonization Roads	A. Russell, C.L.D.
1847	520	Plan du Village—St. Césaire	S.P.Reneaud Blanchard.
1849	521	Plan of Town of Chicoutimi, County Saguenay	T. Bouthilieu.
1857	522	Plan of the Township of Godmanchester	C.L.O., E. E.Tache, A.C.
1833	523	Plan of of the Township of Armagh	J. Bouchette, jr., D.S.G.
1856	523	Plan of Township of Allumette Island	Cr. Lds. Dept.
1862	526	Plan du Bassin de Gaspé	Aut. Painchaud, A.P.
1862	529	Plan of Township of Matapedia	A. Russell, C.L.D.
1831	530	Plan of Seigniory of Rigaud	Jos. Fortune, D.P.S.
1855	534	Part of the St. Maurice, from the Grand Piles to the Mouth	
1858	538	Plan d'une Partie de la Riviere St. Maurice près de la Grand Mère et les terres avoisinant, &c	Hil. Legendre, A.P.
1851	539	Plan of Improvements of the St. Maurice River in Shawenegan Rapid	J. F. McDonald.
1858	540	Plan d'une Partie de la Rivière St. Maurice près de la chute Shawenegan et des terres environments, etc	Hil. Legendre, A.P.
1855	542	St. Maurice River, Plan showing where breach occurred in 1855	S. I. Dawson.
1872	547	Certain tracts of Land in Seigniory of Cap de la Magdelin	E. J. Harkin.
1853	557	Plan of the Islands and booms at the mouth of the River St. Maurice	Simon J. Dawson.
1853	565	Plan showing the Land taken by the Government at the Gatineau for Works	John A. Lowe.
1864	569	Plan of proposed canal to join Leamy's Lake with Gatineau River	W. A. Austin, C. E., P. L. Surveyor.
		do do (Record plan)	
1865	573	Plan of Part of Black River	S. J. Al. Evans.
1862	578	Plan and Section of Part of the River Coulonge from dead water above High Falls to dead water below Rapids	W. A. Austin, C.E.
1862	578	" Sections	"
1866	583	Property required for the Coulonge Slide	H. Symmes, P.L.S.
1848	585	Plan Figuratif du Pont Bâtie sur la Grand Rivière DuChene	Louis LeGendre. Arp & Dep., G. Voyer.
1845	592	Ottawa River, Chats Rapids	Jas. West.
1869	605	No. 1, Chart of River St. Lawrence at Pointe-anx-Trembles.	G. F. Baillairge.
1869	606	No. 2, " " Lavaltrie to Lanoraie.	"
1869	607	No. 4, " " Cape Charles	"
1854	608	Survey of St. Lawrence opposite Montreal	T. C. Keefer.
1846	610	Soundings taken in South Channel of Lake St. Peter up to 1846	
	611	No. 1 R. St. Lawrence-Montreal to Verchéres	Bayfield's Chart.
		" " " Verchéres to Sorel	Enlarged by C. Ready.
1850	616	Lachine Rapids and Channels to Montreal	T. C. Keefer.
1823	617	Part of St. Anne's Suburb, and direction of Lachine Canal	Alex. Gibbs.
1879	63	Goderich Harbour, Lake Huron	Wm. Kingsford.
1874	64	Collingwood, Plan of Breakwater	" "
1876	66	Parry Sound, South Channel Shoal No. 3	C. E. Michaud.
1876	67	" " " " 4	" "
1875	71	Port Elgin, Lake Huron	" "
1858	73	" "	Sproat & Hawkens.
1877	74	Newcastle Harbour	Wm. Kingsford.
1877	75	" " Showing Improvements	S. Derbishire.
1874	77	Oshawa Harbour	C. E. Michaud.
1874	78	Darlington Harbour	Wm. Kingsford.
1875	79	" "	" "
1878	80	Burlington Piers	L. E. Trudeau.
1873	83	Harbour of Napanee	Wm. Kingsford.
1868	86	Harbour of Port Burwell	Thomas Munro.
1876	89	Oakville Harbour and Sixteen Mile Creek	F. M. Hamel, A.S. G. L. Bourchier.

LIST OF BOOKS, MAPS, PLANS, CHARTS, &c.—*Continued.*

Date.	No. of Plan.	Title.	Compiler.
1874	90	Port Franks, Lake Huron	C. E. Michaud.
1876	95	Kincardine Harbour	L. E. Trudeau.
1879	97	Penetanguishene, Bay and Harbour	S. Derbishire.
	100	Port Hope Harbour	F. M. Hamel, C.E.
1875	109	R. St. Mary, East Neebish Rapids	C. E. Michaud.
1878	110	" Part of East Neebish Rapids	F. M. Hamel.
1879	110	Western Peninsula of Ontario, showing Railways Completed and in Progress	Port Dover, Lake Huron and Stratford Ry's.
	127	Index to the Fortifications Surveys round Kingston	
1879	140	Harbour of Cobourg	C. E. Michaud.
1833	157	Town Plot of Verulam	F. Huston.
1873	175	Cobourg Harbour, proposed extension for Harbour of Refuge	R. C. Douglas.
1859	176	Napance	A. B. Perry.
1869	177	Proposed embankment across River Cataroqui	Mervin Jones, C.E.
1876	196	River Trent at Hastings Village	Thos. D. Belcher.
1869	203	Improvements at Pooley's Bridge, Ottawa	G. H. Perry.
1869	204	Sites Required for Water Works, Ottawa	
1863	240	Toronto Harbour Works, Queen's Wharf	Kivas Tulley.
1860	321	Nippissingue and Trent Lakes	T. C. Clarke.
1870	235	Proposed Works in Goderich Harbour, contract plan	J. Page.
184-	371	Proposed Road—Toronto to Saugine	Wm. Hawkins.
1871	385	Plans of Cartier Bridge, Ottawa	G. H. Perry, C. E.
	387	Roads between London and Port Sarnia	
1840	387	Most reliable route for road " "	J. G. Chewett.
	387	Line of road	
1842	390	Proposed Routes, Brantford-London Road (2 copies)	J. M. Shaw.
		London and Brantford Plank Road	
1842	410	St. Lawrence and Ottawa, Military Road	Jas. Wests.
1843	433	Map No. 3, to accompany report on	J. Hall.
		Macadamized District Roads in C. W.	Dav. Thorburn.
1843	439	Unsurveyed Lands South of Owen Sound between Ashfield and Sangine Road	Wm. Hawkins.
1842	442	Country between Lake Ontario and Rice Lake for line of Proposed Plank Road.	N. H. Baird.
1843	443	Communication between Rice Lake and Lake Ontario	John Huston, P.L.S.
1846	445	Proposed Line of Road, Rideau to the Boncher	M. McPherson.
1845	446	St. Lawrence and Bytown Road	J. S. Bruce, D.P.S.
"	"	" "	" "
"	"	" "	" "
	449	Line of the Rideau Canal	
	489	Lake St. Francis, laid down from D. Thompson's Chart.	
1841	491	Town of Paris	Thomas Allchin.
1854	493	Vice-regal Park and other grounds City of Toronto	F. F. Passmore.
1846	498	Peterborough	D. B. Papineau, C.C.L.
	499	Brantford	
	508	Seigneury of Pointe à L'Orignal	
1861	519	Plan of the Two Creeks on Lake Erie	F. A. Wise.
1856	523	Present and proposed channel through the narrows of Lake Simcoe (2 copies)	
1846	527	Continuation of Windsor Harbour and Lake Scugog Road to Narrows of Lake Simcoe	James Lyons.
1853	529	Mouth of River Nottawasaga	Fred. Cumberland.
1853	533	Chart of the Fishing Islands, Lake Huron	Sand. Fleming.
1868	531	Chart of Baie du Dard	Alexander Sproat.
1834	537	Chart of the Navigation between Lake Erie and the Port of Goderich for the Steamboat *Menesetunk*, Canada Company's Office	Henry Lizars.
1845	538	Plan of the Mississipi Snye and Portages and Ferry connecting navigation from Lake Chaudiere to Chats Lake	
1869	541	14 Inner Bay of Long Point, Lake Erie	T. Munro.
"	"	" " reduced (copy)	"
"	"	Head of Inner Bay "	"
1870	546	No. 7 Surveys for line of water communication, Northwest Territory, 1869	"
		Outlet of Kashaboiwe Lake	"
1870	546	Sections "	"
"	"	Profile "	"
	551	St. Lawrence R., Gananoque and vicinity	
1816	553	Inner and Outer Bays of Long Point	By order of Admiralty.
1874	558	Bayfield Harbour, Lake Huron	Wm. Kingsford.

LIST OF BOOKS, MAPS, PLANS, CHARTS, &c.—*Continued.*

Date.	No. of Plan.	Title.	Compiler.
1853	559	Owen Sound, Extension Survey, O. S. & H. Ry	Sandford Fleming.
1842	563	Harbour of Kingston	F. P. Rubidge.
1873	564	Meaford	Wm. Kingsford.
1853	571	Mouth of Saugeen River and adjacent shore	
1873	578	Port Albert Harbour, Lake Huron	C. E. Michaud.
"	"	" works to be performed	Wm. Kingsford.
1873	577	Belleville Harbour	"
1873	579	Harbour of Napanee	Henry S. Langton.
"	"	Napanee River	Wm. Kingsford.
1842	583	Harbour Port Burwell	Peter Carroll, D.A.S.
1844	589	Welland Canal—Harbour at Chippewa	S. Power.
1873	592	Picton Harbour	F. C. Farijana.
1858	594	Harbour at Port Elgin	Sproat & Hawkins.
1873	601	Harbour at Kingsville, Lake Erie	Henry S. Langton.
1840	609	The Rondeau, to accompany a report upon the practicability of constructing a canal thence to River Thames.	Thos. Roy, C.E.
1870	613	Proposed works at Rondeau Harbour, contract plan	John Page.
1868	614	Rondeau Harbour (reduction)	Thos. Munro.
1868	614	" " plan of state of entrance (reduced)	"
1868	614	" "	"
1868	614	" " state of entrance	"
1861	616	" " " "	F. A. Wise.
1843	618	Town and harbour of Windsor	John Shier.
1844	619	Windsor Harbour, with note by G. B. F	John McIntyre.
.....	623	Toronto	
1855	629	Port Hope Harbour	Thos. C. Clarke.
1821	631	Outlets of Black and Anne's Creeks, Township of Whitby.	N. H. Baird.
1848	637	Harbour and creek of Port Stanley	Peter Carroll.
1852	639	Port Stanley	W. D. Hale.
1873	646	Sarnia Harbour	C. E. Michaud.
1853	659	Collingwood Harbour	Cumberland, C.E.
1873	207	Proposed new and old ballast wharf, Wallace	John G. Johnson.
1864	206	Proposed improvements for water supply at Chaudiere Falls, Ottawa.	
1745	195	Louisburg	
1867	53	Miramichi Bay, Ad. Chart, with notes by G. E. McL., 1875	Bayfield & Orlebar.
1864	112	Lines surveyed between E. & N. A. Railway, and the Nova Scotia boundary.	
1870	174	Quaco Harbour, Bay of Fundy	J. E Boyd.
1870	174	Little Hope Island (contract plan)	"
1870	174	" breakwater	
1870	174	" elevation, &c	"
1876	193	Ottawa River, Great to Little Chaudiere	O. R. Wks. office.
1877	194	" Deep River, Mattawan	Geo. H. Perry.
1862	3	Victoria Harbour, B.C	Ad. Chart.
1872	28	City of Victoria, B.C. Published by	T. W. Hibben & Co.
1858 9	30	Haro and Rosario Straits	Ad. Chart.
1876	8	Kamanestiquia River	
.....	9	Kamanestiquia River, from Oliver's Mill to C.P.R. terminus	
.....	10	Kamanestiquia River	
1880	13	Little Current Channel, Algoma	F. S. Farijana.
1869	35	Head of Inner Bay, Long Point, Lake Erie (13)	Thos. Munro.
1869	36	Sketch " " " (14)	"
1879	47	Penetanguishene Bay and Harbour	F. M. Hamel, A.E.
1873	49	Harbour of Port Hope	Alan McDougall.
1874	54	Meaford Harbour	"
1868	62	Harbour of Kincardine	Thos. Munro.
1859	1021	Ottawa River, Ottawa to Montreal	Ship Canal Survey.
1861	863	River Petewawa, mouth to third chute	W. R. Thistle.
1847	383	Plan of the Kempt or Metes Road from Lake Matapedia to the Seignory of Metis.	D. B. Papineau, C. Lds. Of Montreal.
1857	384	Plan of the Kempt Road from the St. Lawrence to the Restigouche, showing the proposed alterations as proposed in A. J. Russells report, (original and copy).	A. J. Russell.
1846	381	Map of the Kempt and Gaspé Roads, also a duplicate of 62 No. (292).	A. J. Russell.
1862	385	Map of part of Lower Canada, showing line of Tache Road	P. M. Van Koughnet, Com. Cr., Lds.
1847	390	Sketch of Lake Temiscouata Road	A. J. Russell.

LIST OF BOOKS, MAPS, PLANS, CHARTS, &c.—*Continued.*

Date.	No. of Plan.	Title.	Compiler.
1854	392	Plans des différents lignes explorées pour le Chemin Témiscouata, (plan A. A.)	J. T. McDonald. (copy.)
1864	394	Chemin Temiscouata	G. H. Parent.
1859	405	Plan showing Cap Rouge Bridge and grounds adj'g	Hacher & Fletcher.
1859	405	" of platform "	Wm. Burry.
1859	405	" of Frame of Swivel	P. Fleming.
1859	405	" Section, Profile, &c	Hacher & Fletcher.
1859	405	" of centre frame of swivel	P. Fleming.
1859	405	" of proposed bridge with swivel	P. Fleming.
1841	407	Plan of projected Road along the south branch of the St. Lawrence-Point Levi to Riv. Etchemin arm of Road above the Cape.	A. Larue.
1845	409	Plan du Clemin de Kemecbec	J. P. Prous.
.....	410	Outline Map military road from Quebec to Halifax	
1755	411	Plan of the Gomin Road	
1847	413	Land required for the road, connected with bridge over Jacques Cartier River.	Report of A. Bodier, S. S.
1846	414	Jacques Cartier Bridge rough levels &c	
1846	414	" " Plans, &c., of the river	
1845	414	" " Proposed bridge	T. P. Rubidge.
1845	414	" " " Elevators &c	"
1845	414	" " Plans &c	"
1855	421	Plan of Bridge site at Lachute	Alex. McDonald, C. E.
1839	425	Sketch of the Roads from Montreal to Ste Rose by Côte des Neiges and Mile End.	A. Stevenson, for Board of Works.
1840	427	Sketch of the Montreal District, showing the military posts in and as proposed in Lt.-Col. Oldfield's Memo. 21-3-40.	P. F. Bambrigge, Lt. R. E.
1845	430	Plan of the Eastern Township Main Road from Chambly to Granby, No. 1	Arthur Wells, C.E.
1845	.....	" No. 2	"
1845	431	Plan of the Stanstead Branch of the Eastern Townships Main Road.	"
1845	432	Plan of the line of Road from Jones Bridge, River Richelieu to Spears Corners, leading to the East Village of Stanbridge.	Off. of Bd. of Wks.
1844	434	Plan of a Bridge for the River Grand, Bonaventure	A. J. Russell.
1845	446	Guide Lines for Road from St. Agnes to Grand Bay	G. T. Baillairgé.
1845	450	Plan Figuratif du Chemin de Gentilly by direction of W. H. Baird, C.	F. L. Poudrier, D.A.P.
1845	451	Plan Figuratif du Chemin partant de la Chapelle St. Eusebe de Stanford allant vers celle de St. Norbert.	F. L. Poudrier.
1845	452	Plan Figuratif de L'endroit appellé le Domaine dans le Township Blandford.	F. L. Poudrier, D.A.P.
1848	453	Plan Figuratif Montrant deux nouvelles lignes de chemin, Tirées par.	F. L. Poudrier, D.A.P.
1846	455	Plan of the Arthabaska and Gentilly Roads	Office of Board of Wks.
1845	456	Diagram of Arthabaska	" "
1846	465	Plan of Projected Road from Grand Frénière to St. Andrews	Duncan Sinclair. W. Teasdale.
1846	465	Sections of do	"
1852	679	River du Loup. Approach from Main Road to the Proposed pier.	G. F. Baillairgé.
1846	676	River du Loup. Plan, &c., of Landing Pier. (2 plans.)	F. P. Rubidge.
1851	680	Pointe au L'Origneaux, Landing Pier	"
1851	680	" " Elevation	"
1852	681	" " Approach to Landing Pier	G. F. Baillairgé.
1832	687	St. Lawrence, Anchorage between Grosse Ile and Margaret Ild. Bayfield.	Pub. by Order of House of Assembly.
1845	698	Village of Nicolet	
1836–7	691	Pointe Platon, enlarged from Bayfield 3 to 1	For Capt. Boxer, R.N.
1836–7	691	" " " 6 to 1	
1843	700	Beach of Montreal, from Ruisseau Migeon and the Harbour	
1859	620	Yamaska River. Ile St. Jean to St. Aimé	R. Forsythe.
1856	621	Lake St. John and River Chamouchouan	G. Duberger.
1862	623	Part of Rivière Beauport, showing lands of Col. Gugy, and J. B. Renaud.	P. L. Morin.
1808	624	Part of St. Lewis Falls. Isle au Diable and Isle Boket	Lewis Chartrand.
1854	625	Galoppe Rapids, endorsed St. Lawrence Rapids No. 2.	Maillefort.

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Date.	No. of Plan.	Title.	Compiler.
1856	627	Soundings taken in the River Nicolet from the Bridge to Lake St. Peter.	
1848	631	Mouth of the River St. Charles from Capt. Bayfield's Plan..	James Stewart.
1833	632	Survey of waters between Lorette and Cap Rouge Rivers...	J. Hughes. G. F. Baillairgé.
1847	633	Waters between the St. Charles and Cabouge Rivers.....	Wm. Ware. G. F. Baillairgé.
1848	634	Part of the Beach of the River St. Charles	Wm. Ware.
1846	637	Beach on south side of the Channel of the River St. Charles, Surveyed in 1840.	G. F. Baillairgé. Supt. Draftsman.
1840	639	Chart of River St. Lawrence from St. Helen's Isld. to St. Paul Isld.	P. Fleming.
1836	640	South Shore of St. Lawrence—between Lakes St. Francis and St. Louis.	Henry G. Thompson.
1833	641	Proposed Improvements of the St. Lawrence.....	J. B. Mills.
		No. 1. Lake St. Francis to Pt. Fer le Cheval.....	S. Keefer.
1836	652	Survey of Lake St. Louis with Soundings	A. LaRue, P.S.
1836	614	Part of the Lake St. Francis, with soundings.... ..... Hungry Bay, &c., Pointe au Beaudette to Coteau du Lac...	" "
1835	646	River Cataraqui or St. Lawrence between Lakes St. Louis and St. Francis.	Alex. Stevenson.
1846	709	Chart of Quebec Basin and environs.....	
1846	709	Pt. of Quebec, showing St. Charles Beach.....	G. F. Baillairgé.
1846	716	Projected Pier at L'Islet. ..... Several Sites.....	F. P. Rubidge.
1846	717	L'Islet, projected pier....	G. F. Baillairgé.
1852	718	" Approach to projected pier at Telegraph Rock. ...	"
1852	723	Trou de Berthier, Approach to Proposed pier on North East Side.	" G. F. Baillairgé.
1872	724	Harbour of Refuge at Paspebiac, Bay Chaleur.....	Henry Carré, C.E.
1830	733	Obstructions in Navigation of River Richelieu at St. Antoine and St. Denis.	Aug. Keefer.
1868	738	Plan officiel de la Paroisse de St. Antoine de Longueuil, Comte de Chambly.	Dept. of Cr. Lds.
1868	739	Plan officiel de la Paroisse de St. Bruno, et de Village de St. Bruno (inset).	Dept. of Cr. Lds.
1868	740	Plan officiel du Village de Boucherville.....	Crn. Lds. Dept.
1868	740	La Paroisse de la Ste. Famille de Boucherville..... ..	" "
1868	741	Plan officiel de la Paroisse de St. Hubert....	" "
.....	743	Domaine de la Seigneurie de Sault St. Louis, Comté de Laprairie.	
1340	760	Harbour of Montreal, showing proposed breakwater.....	John Cliff.
1852	764	Railway Bridge over the St. Lawrence at Montreal. (Victoria Bridge).	T. C. Keefer.
1852	764	Elevation....	"
1816	787	Part of the St. Lawrence and part of the Richelieu Rivers, showing the nature of the intermediate ground.	Alex. Stevenson.
1872	809	Proposed Hanging Boom at Greece's Point.....	J. Y. Gaudet, C.E.
1853	811	Land taken by the Government at the Gatineau.....	John A. Snow.
1868	830	Boucherville Village.....	Cr. Lds. Dept.
1861	866	Terrebonne, Pine Mountains, Argenteuil..... ..	J. Bouchette.
....	867	St. Maurice Territory.....	
1862	867	" "	J. Bouchette.

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1844.—Ottawa Union Suspension Bridge, from Hull.
1844.—Ottawa Union Toll Gate (Vignette Title).
1844.—Map of Canada, by Edward Staveley.
1845.—Bridges at St. Annes La Parade.
1845.—Lachine Canal, Sluice Gates, J. Sutherland; Hector Munro; and Alexander Kinlock.
1845.—Port Dalhousie, Harbour and proposed improvements (L. J. Leslie).
1844.—Bout de l'Isle, Egyptian Towers for Suspension Bridge (F. P. Rubidge).
1845.—Bout de l'Isle, proposed Suspension Bridge (F. P. Rubidge).
1844.—Bytown, Union Suspension Bridge (F. P. Rubidge).
1844.—Bytown, Union Suspension Bridge, details, figs. 1-5 (also photo (F. P. Rubidge).
1844.—Bytown, Union Suspension Bridge, details, figs. 1-6 (F. P. Rubidge).
1844.—Bytown, Union Suspension Bridge, anchor plates (F. P. Rubidge).
1844.—Bytown, Union Suspension Bridge, cast and wrought iron work (F. P. Rubidge).
1844.—Bytown, Union Suspension Bridge, bridges leading to (F. P. Rubidge).
1844.—Batiscan, elevation plan of wooden bridge (F. P. Rubidge).
1844.—River St. Maurice, plan of wooden bridge (F. P. Rubidge).
1845.—River Etchemin, proposed bridge (F. P. Rubidge).
1842.—Berthier, bridge over the Bayonne (F. P. Rubidge).
1845.—Chateauguay, proposed bridge over (F. P. Rubidge).
1844.—Bout de l'Isle, bridge over main raft channel.
1844.—Burlington Bay Canal, ferry boat.
1844.—Bout de l'Isle, swing bridge over Ottawa river.
1845.—Melbourne bridge, St. Francis river.
1844.—Coteau du Lac, bridge over Rivière a de l'Isle.
1845.—Gananoque, bridge over Gananoque river.
1843.—Belleville, proposed bridge over River Moira.
1845.—Bout de l'Isle and Raft Channels, survey of River Ottawa (F. P. Rubidge).
1845.—Bout de l'Isle and Raft Channels, bridge from Montreal island.
1845.—Lake Erie, plans, &c., wooden piers for harbours on
1843.—Windsor Harbour, as constructed.
1843.—Kempt and Gaspé Roads, bridges constructed on (A. J. Russell).
1843.—Kempt and Gaspé Roads, bridges constructed on (A. J. Russell).
1843.—Rice Lake to Lake Ontario, lines of communication.
1843.—Delaware Bridge, River Thames.
1845.—Rouge Hill, with the several lines of road.
1845.—Townships in vicinity of London (Port Stanley inset) (F. P. Rubidge).
1843.—Beauharnois Canal, machinery for lock gates (F. P. Rubidge).
1843.—Beauharnois Canal, lock gates.
1843.—Beauharnois Canal, lock gates, details.

CHARTS IN BOOK B.

1866.—River St. Lawrence, Montreal to Farrens Point (Ad. Chart).
1828.—River St. Lawrence, Lake Ontario to Galops Rapids (Ad. Chart).
1866.—River St. Lawrence, Farrens Point to Kingston (Ad. Chart).
1851.—Lake Ontario and back communication with Lake Huron (Ad. Chart).
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1828.—Lake Huron, Sheet III (Ad. Chart).
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Public Works of Canada.
Lachine Canal, Dominion of Canada, connecting Lake St. Louis and the Harbour of Montreal on the River St. Lawrence. Drawn by C. E. Michaud.
Union Suspension Bridge, Ottawa river, Bytown. Details. (F. P. Rubidge.)

Union Suspension Bridge, Bytown. Details. (F. P. Rubidge.)
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Lachine Canal, Swing Bridge, 1844.
Proposed Lighthouse at the Upper Gap, Bay of Quinte, 1864. (F. P. Rubidge.)
General plan and details of a bridge to be built over the Main Raft Channel, Bout de l'Isle, 1844.
Lighthouse on Mohawk island, Lake Erie, 1846. (F. P. Rubidge.)
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Point Pelee Lighthouse, 1858.
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1854.—Maps, Reports, estimates, &c., *re* Canal, River St. Lawrence and Lake Champlain.
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1854.—Division 3, Lake St. Francis to Pointe au Diable, comprising the Coteau Rapids.
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1853.—Division 5, Pointe au Moulin to Lake St. Louis, comprising the Split Rock and Cascades Rapids.
1856.—Diagram Map, exhibiting the various routes proposed for the St. Lawrence and Lake Champlain Ship Canal.

CHARTS IN BOOK 'H.'

Bayfield's charts of the River St. Lawrence from Quebec to Kingston, with lighthouses marked thereon.
2788.—River St. Lawrence, Sheet I, Point Pizeau to Frechette Island.
2787.—River St. Lawrence, Sheet II, Frechette Island to Cap Santé (2 copies).
2786.—River St. Lawrence, Sheet III, Cap Santé to Grondine.
2785.—River St. Lawrence, Sheet IV, Grondine to Batiscan.
2784.—River St. Lawrence, Sheet V, Batiscan to Becancour.
2783.—River St. Lawrence, Sheet VI, Becancour to Port St. Francis (2 copies).
2782.—River St. Lawrence, Sheet VII, East Part of Lake St. Peter.
2781.—River St. Lawrence, Sheet VIII, West Part of Lake St. Peter.
2780.—River St. Lawrence, Sheet IX, Stone Island to Lanoraie (2 copies).
2779.—River St. Lawrence, Sheet X, Lanoraie towards Contrecœur.
2775.—River St. Lawrence, Sheet XI, Contrecœur to Repentigny (2 copies).
2777.—River St. Lawrence, Sheet XII, Repentigny to Long Point (2 copies).
1127.—Montreal Harbour.
North America, Sheet II, Gulf of St. Lawrence (2 copies).
Plan received, 10 August, 1909.
1831.—Plan du Palais Episcopal et du Terrein en Dependant, Québec. (Jos. Hanell, Arp.)

PLANS RECEIVED FROM PUBLIC WORKS.

September 20, 1909.

1854.—Plan de la Cite de Québec, Fonde par Samuel Champlain de Brouage en 1608. Population en 1854.

1854–1870.—Vraie copie du Plan annexé à L'acte de Vente en date du 11 Novembre 1854, par William V. Sewell et autres à Sa Majesté, passé a Québec devant Chas. M. de Foy, N.P., Québec, 2 Avril 1870. (G. F. Baillairge.)

1854.—Property of Henry Atkinson, Esq., Spencer Wood Cove Plan. N. Larue, Architect, 27 March, 1854. Vraie copie, Jos. Rosa.

1855.—Plan of the Boundary between Spencer Wood and Gilmours Cove, as surveyed by G. G. Dunlevie, P.L.S., 20 October, 1855.

1854.—Boundary of that part of Spencer Wood purchased by the Government of Canada from H. Atkinson, Esq. True copy. (A. Campbell.)

1831.—Plan du Palais Episcopal et du Terrein en Dependant. A copy of same plan as above referred to.

December 4, 1909.

1853.—Plan of St. Lawrence from Cedars Mills to Beauharnois Canal. (James Stewart.)

N.D. Plan officiel de la Paroisse de St.-Boniface.

N.D. Paroisse de Ste.-Flore, Canton de Radnor.

N.D. Paroisse de Notre-Dame de Mont-Carmel.

N.D. Plan officiel de la Paroisse de St.-Etienne.

N.D. Plan officiel de la Paroisse de Ste.-Flore.

N.D. Plan officiel de la Paroisse de Notre-Dame de Mont-Carmel, Comté de Champlain.

1847.—Sketch of the Temiscouata Road. (A. J. Russell.)

1841.—Plan of part of the Seigniory of Madawaska and Temiscouata. (W. Ware and Andrew Russell.)

1857.—Plan showing the quantity of land occupied upon the property of A. L. Fraser. by the new road heading from the Village of Rivière du Loup to Lake Temiscouata. (G. F. Baillairge.)

1854.—Plan des Differentes Lignes Explorées pour le Chemin Temiscouata, 1854. Plan A.A. (J. F. McDonald.)

1861.—Plan of the New Temiscouata Road in the County of Temiscouata, Lower Canada. (Jos. Rosa and J. C. Simpson.)

1861.—Western Division of the Cap de Chatte and Great Fox River Road, showing proposed road from Cap de Chatte to the Great Magdalen River. (G. F. Baillairge.)

1861.—Plan of Line of Proposed Road from Great Fox River to River Magdalen, in the District of Gaspé, according to exploration made by G. F. Baillairge.

1848.—Guide Lines for Road from St. Agnes to Grand Bay. (Jas. Stewart.)

N.D. The Proposed Main Line from Granby to the Outlet, and the Branch Line thence to Sherbrooke. (Arthur Wells.)

N.D. Map of the Proposed Road leading from River des Prairies to Grenville.

1845.—Topographical Map of the Existing and Proposed Road from the Bridge across River Laprairie to Grenville. (Owen Quinn.)

N.D. Plan of the Survey of the Shefford, Melbourne and Drummondville Roads, connecting the adjacent country with the St. Lawrence and Atlantic Railroad Line. (O. Wells.)

1861.—Eastern Division of Cap de Chatte and Great Fox River Road on the proposed main road from Great Fox River to Great Magdalen River. (G. F. Baillairge.)

1845.—General Plan of the vicinity of the Chats Rapids, Ottawa River. (Thos. Keefer, C.E.)
N.D. Montreal and Environs.
N.D. Seigniory of Murray Bay.
1853.—Map of the City of Montreal, compiled from the most recent surveys, by W. N. McKenzie.
1848.—Plan of the River St. Maurice. Surveyed from its mouth in the St. Lawrence to its source in the Height of Land. (P. C. Bourke.)
1831.—Lt.-Col. By's Projected Improvement for Steamboat Navigation to surmount the Sault des Recollets and Chenal de Terre, Rivière des Prairies. (John By.)
1835.—Plan de la Seigneurie de Lavaltrie. (L. Dorval.)
1848 (?).—Endorsed, 'Board of Works Survey of part of the River St. Lawrence between Montreal Harbour and Laprairie.' (D. Thompson.)
1842.—Plan of the River St. Lawrence from Cotcau du Lac to the Cascades. (H. G. Thompson.)
1852.—River St. Lawrence at and near to Coteau Fort. (James Stewart.)
Plan of the River St. Lawrence from Coteau du Lac to the Cascades, with its soundings. (H. G. Thompson.) (Copied by A. Larue.)
1836.—Plan of the Survey of Lake St. Louis, with soundings to. (A. Larue.)
Map No. 5.—Survey of a portion of the River St. Lawrence, from Pt. au Moulin to Lake St. Louis, including the Cascade Rapids.
A Chart of the Estimated Survey of Lake St. Francis, and soundings. (David Thompson.)
1830-1.—Plan A of the Trigonometrical Survey of the St. Lawrence or Cataraqui between the Lakes St. Louis and St. Francis. (A. Stevenson.)
1854.—Map No. 4.—Survey of a portion of the River St. Lawrence between Pt. au Diable and Pt. au Moulin, including the Cedar Rapids. (Maillefort.)
N.D. Map of part of Lower Canada, showing the roads under charter by the Quebec Turnpike Trust. (James Cane.)
N.D. Plan of the Harbour of Quebec at low water. (P. Maclean.)
1854.—Map No. 3.—Survey of a portion of the River St. Lawrence between Lake St. Francis and Pt. au Diable, including the Coteau Rapids. (Maillefort.)

RESEARCHES IN ONTARIO.

Report of R. Laidlaw.

Dr. Doughty,
Dominion Archivist.

Sir,—Herewith I submit a statement of the results of searches made during the past year in the province of Ontario for documents, papers, &c., of historical interest. The time at my disposal was devoted entirely to eastern Ontario, Toronto and the Niagara district.

CHURCH AND PARISH RECORDS.

Visits were made to the old parishes in the eastern portion of what is now known as the province of Ontario, and arrangements made for copying the early lists of births, marriages and deaths. In order to obtain the earliest records of this character for the district, it was necessary to go to St. Regis, P.Q., what is now the parish of St. Andrews, county of Stormont, having been established as a mission under the priest of that parish. These date back to 1759. St. Andrews was set apart as an

independent parish about 1800, and after that date the registers were kept there, but the earlier records remained at St. Regis. At St. Raphaels, the registers date back to 1786. The above are all Roman Catholic parishes.

The early registers there are being copied by: Rev. Father Bourget, at St. Regis; Rev. Father McRea, at St. Andrews; Rev. Father Campbell, at St. Raphaels.

At Williamstown, in the county of Glengarry, in the possession of Mr. Geo. H. McGillivray, are the registers kept by the Rev. Mr. Bethune, the first minister of the Presbyterian church there. These begin about 1786. Mr. McGillivray is making a copy of these registers for his own use, and when he has completed this work, will hand over the originals to the Archives.

In the office of the Clerk of the Peace at Cornwall is the original register of certified marriages of members of the Church of Scotland, Lutherans, Congregationalists, Baptists, Independents, Methodists, Presbyterians and Moravians, from 1831 to 1865. A copy of this register has been made, and is now in the Archives.

In 1885, there was made for the Archives, under the supervision of Rev. C. B. Pettit, M.A., Rector of Cornwall, a copy of the registers of births, marriages and deaths for that parish, 1803–1846.

Churches organized in this district for many years in the early days of the country were established as missions. Consequently the registers referred to cover all these missions, and form a complete record for that portion of the old district of Luneburg, later known as the Eastern District.

At Brockville, in the office of the Clerk of the Peace, there is the original register for the district of Johnstown, of certified marriages of members of churches other than the Church of England and Roman Catholic. A copy of this is being made for the Archives.

His Honour, Judge McDonald, of Brockville, has in his possession the original register kept by the Rev. William Smart, the first Presbyterian minister in Brockville, beginning 1811. This he has promised to donate to the Archives.

In St. Georges Parish House, Kingston, are the old registers of the Church of England, for the Diocese of Ontario. These date back to the latter part of the eighteenth century.

Search was made in the offices of the clerks of the peace in St. Catharines, Welland, Cayuga and Hamilton, for registers of certified marriages such as are in Cornwall and Brockville, but none were to be found.

SESSIONS OF THE PEACE RECORDS.

In the early days of the country the Sessions of the Peace was a much more important body than it is to-day. Not only did its members act in a judicial capacity, but they also exercised nearly all the functions that municipal councils now enjoy. In fact the whole administration of the affairs of the district devolved upon them. The records of these proceedings are therefore of special interest.

For the eastern part of Ontario these records are complete and in an excellent state of preservation. They are in the offices of the clerks of the peace at Cornwall and Brockville. Those in Cornwall date back to 1789, and those in Brockville to about the same time. Two of the earliest volumes of the Minute Books in Cornwall, covering the period 1789 to 1827, have been copied, and are now in the Archives.

In the Niagara district, diligent search was made for similar records in the public offices at St. Catharines, Hamilton, Welland and Cayuga, but none could be found. It is supposed that they were destroyed during the war of 1812-15, when the Americans invaded Canada and burned the old town of Niagara.

In this connection it may be stated that the Registry Office at Niagara was burned at that time with its contents, which included all documents such as deeds, mortgages, &c., relating to lands. In order to replace as far as possible what had been destroyed,

the government of that day appointed a commission, with power to call upon all persons in the district to bring to them such deeds, mortgages, &c., as might be in their possession, so that copies might be made and the records thus preserved. The documents copied at this time are contained in two large volumes now in the Registry Office at St. Catharines, and known as 'Commissioners' Books.'

CHRYSLER PAPERS.

These papers, which are in the possession of Mrs. Chrysler of Niagara Falls, form a somewhat voluminous and very interesting collection. They date back to 1775, when John and Adam Chrysler, U.E. Loyalists, left the United States and came to Canada, settling in the Niagara district. John and Adam Chrysler were brothers of the Chryslers who located in Dundas county about the same time, and on whose farm the battle of Chrysler's Farm was fought. The more important of these papers are being copied for the Dominion Archives by Miss Chrysler.

HAMILTON PAPERS.

In the old Hamilton home at Queenston, the documents and papers left by the family still remain. The Hamilton family was very prominent in the commercial, military, political and social life of the Niagara district during the latter part of the eighteenth and the earlier part of the nineteenth century. Some of the members took a prominent part in the war of 1812-15. Permission has been obtained from the representatives of the Hamilton estate to examine these papers, but this cannot be done until next summer.

CHEWETT PAPERS.

These belong to the estate of Wm. Chewett, Surveyor General of Upper Canada during the early part of the nineteenth century, and are in the possession of his descendants in Toronto and in England. They are being collected, and will be presented to the Archives.

JOHN WILLSON PAPERS.

Mr. Frank Willson, of Beaver Dams, Niagara district, has quite a large collection of papers dating back to 1775. These were carefully examined, and found to contain accounts, receipts, mortgages, deeds, bonds, &c.

UPPER PAPERS.

These belong to the family of the late Col. Upper, of Allanburg, Niagara district, and go back to a very early date. Mr. Upper will hand them over to Mr. J. H. Thompson, President of the Thorold and Beaver Dams Historical Society, who will forward them to the Archives for examination.

TUCKER PAPERS.

These are in the possession of Mr. Baruch Tucker, of Allanburg, and date back to very early days. They will also be handed over to Mr. Thompson to be forwarded to the Archives.

BRENNAN PAPERS.

Mr. E. H. Brennan, of Welland, has a number of papers dealing with Indian affairs. They are copies only, and will not be copied at present.

GORING PAPERS.

Francis Goring came from Ireland to Quebec in 1776 with a party of artificers in the hospital ship *Speak*. His position was that of clerk to Col. Christie, Quarter Master General. He was afterwards engaged in business at Niagara, latterly in partnership with Samuel Street and James Bennett. Mr. Carl C. Fisher, of St. Catharines, Registrar of Lincoln county, a great grandson, says there are several diaries and manuscripts of Mr. Goring's among the descendants. He is making an effort to obtain them for the Archives.

MACKLEM PAPERS.

I called on Mr. Macklem at his house in Chippewa, and was informed that he had given away his papers of historical interest. The Cummings papers had also been disposed of by the surviving representatives of the family.

In this connection it may be stated that what is to be known as the Street and Macklem Collection of Books, &c., has been presented by the families to the Public Library at Niagara Falls, Ont. The new Library there is nearing completion, and the boxes containing the books will not be opened until the building is finished and ready for use. I therefore did not have an opportunity to examine the collection.

RYKERT PAPERS.

Mr. J. C. Rykert, of St. Catharines has a large collection of books and papers, principally of a political character, including newspaper files, scrap books, &c.

MRS. J. J. CURRIE.

Mrs. J. J. Currie, of St. Catharines, has a large collection of copies of documents, in connection with her work, the 'Life of Laura Secord;' amongst them a manuscript diary or recollections entitled, 'Account of an Eventful Life,' written for Jennie Stovin by Elizabeth Grover, Coulborne, Ont. The reminiscences in the last mentioned book go back to 1776.

PRINGLE PAPERS.

Mr. R. R. Pringle, ex-M.P., Cornwall, has presented to the Archives a number of valuable papers, &c., consisting of regimental orderly books, army lists, &c.

Mrs. Corbett, of Cornwall, also contributed several interesting documents which had belonged to her father, the late Judge Pringle.

BISHOP STRACHAN PAPERS.

Mrs. Wm. McLennan, of Cornwall, has a considerable collection of letters written by the late Bishop Strachan. These are mostly of a private character.

BERGIN PAPERS.

The late Dr. Darby Bergin, of Cornwall, for many years M.P. for that district, during his public career acquired a large collection of parliamentary blue books and political pamphlets. These were inherited by his brother, John Bergin, who died last fall. I was allowed to examine the library, and secured quite a collection of pamphlets and books for the Archives.

SANDFIELD MCDONALD PAPERS.

There seems to be very little left of papers and documents that belonged to the late Hon. John Sandfield McDonald, the first premier of the province of Ontario. While in Cornwall I met his daughter, Madame Langlois. She was collecting such papers as were to be found, to take with her to Portneuf, P.Q., where she resides. If there is anything of public interest in them she will forward it to the Archives.

COLQUHOUN PAPERS.

Mrs. Colquhoun, Cornwall, has in her possession a number of old orderly books and a few other documents of early date, but I had not an opportunity to examine them.

BISHOP MACDONELL'S LIBRARY.

The library of the late Rt. Rev. Alex. Macdonell, first Roman Catholic Bishop of Upper Canada, is in the possession of Mr. Alex. Duncan Macdonell, of Alexandria, Ont. The library contains a number of valuable Canadian books.

'LAWS OF NEW YORK.'

Mr. Clench, Clerk of the Court, St. Catharines, donated to the Archives a copy of the 'Laws of New York,' printed in 1752.

'UPPER CANADA GAZETTE.'

Mr. M. J. Brennan, Clerk of the Peace, St. Catharines, donated a volume of *Upper Canada Gazette*, 1831-1833.

HAY PAPERS.

Mrs. T. P. Foran, Ottawa, has in her possession an Orderly Book of 1781; also a diary or journal kept by her grandfather, Lieut. John Hay, of a voyage from Montreal to Michilimackinac and return about 1783. Copies of these have been made for the Archives.

BOOKS AND PAPERS *Re* LANDS.

In the Crown Lands Department, Toronto, are the records relating to land grants, &c., since the organization of the province of Upper Canada in 1792. A number of the volumes in this collection have been copied for the Archives, and a list made of the other more important ones.

MILITARY LIST.

In the Patents Branch of the Crown Lands Department, Toronto, is 'A nominal return of the Flank Companies, Troops of Dragoons, Corps of Provincial Marines and Incorporated Battalions in Upper Canada which were entitled to land for their services during the late war with the United States,' giving names, military rank, and remarks as to claims and claimants. This list of corps added to the General Return furnished the Provincial Secretary, dated August 17, 1794, was supplied from returns and documents found in the office of the Adjutant General, Montreal.

DAVID THOMPSON PAPERS.

From the Surveys Branch of the Crown Lands Department have been received the Journals and Diaries of David Thompson, Explorer and Astronomer Royal, covering a period of sixty-one years, 1789–1850. Books No. 1 to 30, the most

important of the series, deal exclusively with northwest exploration from Lake Superior to the Pacific ocean. Included in these are diaries kept during journies from Cumberland House to York Factory, 1790; York Factory to Seepaywisk, 1792; Seepaywisk and Chatham House, 1792-3; Seepaywisk to the Deer's Lake River, 1793; York Factory to Buckingham House, 1793; Buckingham House to York Factory, 1794; York Factory to the Reed Lake House, 1794; at Duck Portage House, 1795-6; Grand Portage to Swan River, 1797; Fairford House to Athapiskow Lake, 1796; Fort George to the Rocky Mountain House, and thence down the Saskatchewan River to Lake Winnipeg, 1800; from the junction of the Mississippi and the Deer's River to the east end of Athabasca Lake, 1796; from McDonell's House, junction of Mouse and Stone Indian Rivers, to the Mandan Villages on the Missouri River and return, 1797-8; Falls of Ste. Marie to Red Deer's Lake, 1798-9; at Fort George, 1799; Fort Augustus to the Forks of the Athabasca River, 1799; to the Kootenaes, Bow River and Rocky Mountains, 1800; Rocky Mountain House to Fort Augustus, 1801; at the Forks of the Peace River, 1803-4; Kaministiquia to Lac la Croix, 1804; Lac la Croix to Rat River country, 1804-5; at Rat River, 1805-6; at Rocky Mountain House, 1806-7; at the Kootenae House, 1807-8; to Kootenae and Salcesh Posts and back via the Columbia River, Saskatchewan, &c., to Rainy Lake House, 1809-10. With these diaries are a great number of astronomical observations, memoranda of surveys, courses and distances, &c.

Books 31 to 64 are taken up almost entirely with the survey of the boundary line between Canada and the United States, under the Treaty of Ghent, from St. Regis, on the St. Lawrence River, to the westernmost part of the Lake of the Woods. These cover a period of fully ten years, 1816 to 1826.

Books 65 to 83 are of a miscellaneous character, including journals of surveys of Lakes St. Francis and St. Peter, a survey of the canoe route from Lake Huron to the Ottawa River via Muskoka and Madawaska rivers; survey of lands in the Eastern Townships owned by the British American Land Company. There are also numerous articles on various subjects relating to the districts through which Thompson travelled.

A careful analysis has been made of these journals.

Respectfully submitted.

R. LAIDLAW.

Ottawa, March 31, 1910.

Report of Rev. P. M. O'Leary.

Dr. A. G. Doughty,
Dominion Archivist,
Ottawa.

Dear Sir,—I submit, as requested, a statement of the work engaged upon by me for the period 1909-10, and forwarded to the department.

ARCHIVES DEPARTMENT, QUEBEC.

1. Report on and index to the Process Verbal of the Grand Voyers for the Province of Quebec—District of Quebec, Montreal and Three Rivers—1708-1841.

2. Report on the 'Voierie de Québec,' 1700-1750.

3. Report on the Registers of the Civil Status for the District of Quebec, 1640 to date.

(*a*) From the Registers in Archives Department, Quebec.

(*b*) From the Registers in the parishes.

4. Report on the Maps, Plans and Charts in the Crown Lands Department, Quebec.

5. Report on and general index to the General Collection of MSS. of the French Régime, 1638-1759.

N.B.—I had to suspend work on this collection when I had reached the 1221 MS., dated 1740, in order to attend to the restoration of the DuBerger Model of Quebec (September 30, 1909).

6. Restoration of the Quebec Model from September 30, 1909, to date.

I remain, yours faithfully,

P. M. O'LEARY, *Priest.*

CARDS TYPEWRITTEN SINCE THE LAST REPORT.

The number of cards typewritten, classified and placed in their respective drawers since the last report amount to 58,813, as per the following statement:—

Manuscripts—		
S. Series	43,265	
C. Series	1,000	
		44,265
Library—		
Catalogue	10,916	
Newspaper articles	3,632	
		14,548
Total		58,813

There are now in the mss. division about 600,000 cards in the drawers, and about 200,000 more ready to be typewritten.

INVENTORY OF MANUSCRIPTS ON THE SHELVES.

Number of volumes on the shelves in room 8 at date of last report (July 23, 1909)	13,534
Number added to room 8 since	155
Number placed in room 11	152
Number placed in room 14	2,287
Total number on shelves	16,128

LIBRARY.

During the year, 1,484 books and pamphlets were added to the library. A collection of medals struck during the French régime was brought from France by Dr. Roy, and several important manuscripts of which a list is given. The Archives has also received a valuable collection of medals struck during the reign of Queen Victoria from Sir Frederick Borden, Minister of Militia and Defence.

I have the honour to be, sir,
Your obedient servant,

ARTHUR G. DOUGHTY,
Dominion Archivist.

OTTAWA, June 1, 1910.
15—17

APPENDIX TO THE REPORT OF THE MINISTER OF AGRICULTURE

REPORT

OF THE

DAIRY AND COLD STORAGE COMMISSIONER

FOR THE

FISCAL YEAR ENDING MARCH 31,

1910

Introduction.
Part I.—Dairying.
Part II.—Extension of Markets.
Part III.—Fruit.
Part IV.—Cold Storage.

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
PRINTED BY C. H. PARMELEE, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1910

[No. 15a—1910.]

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APPENDIX

TO THE

REPORT OF THE MINISTER OF AGRICULTURE

BEING THE

REPORT OF THE DAIRY AND COLD STORAGE COMMISSIONER.

OTTAWA, March 31, 1910.

To the Honourable,
The Minister of Agriculture.

SIR,—I have the honour to submit my report as Dairy and Cold Storage Commissioner in your department for the year ended March 31, 1910. The detailed report is presented under four heads, namely:—

Part I. Dairying.
Part II. Extension of Markets.
Part III. Fruit.
Part IV. Cold Storage.

These four divisions correspond to the different lines of work which I have the honour to supervise as the head of this branch of your department.

I am fortunate in having the assistance of competent chiefs for the divisions of 'Markets,' 'Fruit' and 'Dairying.' These officers have given their undivided attention to the details of their respective divisions.

DAIRYING.

Mr. J. C. Chapais, Assistant Dairy Commissioner, paid a visit to Manitoba in June last and addressed a series of meetings for the benefit of the French speaking farmers of that province. He also attended meetings in Ontario in places where it was necessary to give addresses in the French language. The rest of Mr. Chapais' time was spent in the province of Quebec. The details of his work are presented in the report which he has prepared and which will be found in Part I.

The experiments in the care and cooling of milk for cheesemaking were continued during the summer of 1909, and the results confirmed in every respect the conclusions drawn from the previous season's work. Full details of these experiments as furnished by Mr. Barr, who had charge of the work, will be found in Part I, at page 72. A

summary of the results and the recommendations based thereon have been published as Bulletin No. 22, for which there has been an extraordinary demand since it was first available.

Mr. Whitley has gathered some very illuminating figures from the records of the cow testing associations for 1909. Attention is especially directed to the testimony of members who have increased the average yield from their cows as much as 20 or 30 per cent by making only two or three selections. The number of associations has been increased during the year, but probably the most satisfactory result of our propaganda is to be found in the fact that hundreds of individual farmers have applied for the record forms in order to begin the work of testing on their own account.

An officer of this branch was again stationed at Montreal to act as Official Referee of Butter and Cheese. There was so little demand for his services that I would recommend that the position should not be refilled at present.

The Inspector of Dairy Products has visited different parts of the country during the year, and I am pleased to report that he has not found any serious violations of the dairy laws.

EXTENSION OF MARKETS.

It may appear at first glance to those who read Part II and note the kind of work that is being done through the Extension of Markets Division, that it might more properly be designated as the 'Inspection' Division. It is true that the cargo inspection at Canadian and Old Country ports and the refrigerator car inspection in Canada do constitute the chief outside services of this division, but the office has a large amount of correspondence with Canadian exporters and foreign importers of Canadian farm produce, conducted with a view of improving and extending the trade therein. Moreover, the object of the inspection services is to secure the proper handling of perishable products from producer to consumer in order that they may be delivered in the best possible condition, and there is no surer way of extending the market for any product.

The writer finds it difficult to place the work of this division before the public in its true light, or in such a manner as to give a fair impression of its scope, importance and usefulness, without going into details which would, if cited singly, appear rather trifling. The work of the staff is largely of a routine nature, watching the shipment of produce at all points and taking careful notes as to condition of packages, temperatures, &c., as well as to the methods of handling which may affect either the appearance or the quality of the goods. The complete system of inspection enables us to place the responsibility where it belongs if any injury occurs in transit. A glance at the records obtained by the inspectors, as given in Part II, will furnish some idea of the extent of the work and how beneficial it may be to the trade in perishable products.

FRUIT.

The enforcement of Part IX of the Inspection and Sale Act, generally known as 'The Fruit Marks Act,' and the publication of a monthly Fruit Crop Report from May to September, are the two principal lines of work relating to fruit which have been assigned to this branch, but the system of cargo inspection and much of the cold storage work relate to fruit as well as other produce.

Mr. A. McNeill, Chief of the Fruit Division, has been assisted by a staff of twelve permanent and fifteen temporary fruit inspectors. The temporary men are employed for periods varying from four to six months. Three permanent and two temporary inspectors were added to the staff during the year. A re-arrangement of the location of the inspectors in 1909 provided for three additional inspectors in the prairie provinces and one additional inspector in British Columbia.

The services of the permanent fruit inspectors are utilized during the 'off' season in attending fruit meetings and taking part in orchard demonstrations in the various fruit districts. The work done by the inspectors in this connection has been very effective in promoting better orchard methods.

By your authority, Mr. Frederick G. Earl, son of the well known veteran fruit grower, Mr. Thomas Earl, of Lytton, B.C., was engaged for three months last autumn to give demonstrations in the box packing of apples at various points in Ontario and in the maritime provinces. Mr. Earl's services were very satisfactory in this connection.

The practice of packing choice dessert apples in boxes is growing and there has been a marked improvement in the work of the Ontario packers in recent years. It is a fair assumption to say that this result is due in part, at least, to the instructions which have been given by the experts who have been employed for that purpose by this branch.

I regret to report an increase in the number of convictions under the Inspection and Sale Act, for improper marking and packing of apples. The increase may be attributed in part to a more rigid enforcement of the Act, but chiefly to the peculiarities of the season and the abnormal market conditions. The high prices prevailing about the time the apple crop was being harvested induced growers and packers to put up a large quantity of inferior fruit. In some sections the average grade of the crop was rather low, because many of the varieties were small in size and rather lacking in colour.

The information from which the fruit crop reports are compiled is collected with great care, and every possible means is taken to insure accuracy. A fruit crop report, especially in relation to apples, can never be quite as accurate, in one sense, as reports regarding other crops, for the reason that the total quantity grown is not an absolute criterion of the actual quantity that will be marketed. With almost any other crop all that is grown will be offered for sale, but with apples a great deal depends upon the condition of the market. If the price is low, a larger quantity is allowed to go to waste, and farmers with a few trees are not induced to pack for market, as they are when the price is high. Weather conditions affecting the size of the apples also have considerable influence on the actual quantity of apples harvested.

Mr. McNeill has prepared a report of the Fruit Division, in which the details of the season's work will be found.

COLD STORAGE.

The work of the Cold Storage Division, which receives my personal attention, has grown considerably during the year. The number of applications for the subsidy payable under the Cold Storage Act was larger than in any previous year. Much travelling was involved in making the necessary inspections of warehouses.

The bonus of $100 for the erection of cold storages at creameries is still paid in cases where the construction is up to the standard specification. An inspection is made in each case before the bonus is paid. Mr. J. G. Bouchard attends to the inspection of creamery cold storages along with other duties. The names of the creameries that received the bonus in 1909-10, and other information concerning the matter, will be found in Part IV.

The usual iced car services have been operated during the year. The arrangement put into effect in 1908, providing for the reservation of cold storage chambers for the carriage of fruit on certain steamships sailing from Montreal, was again carried out in 1909. It is hoped by this means to encourage the shipment of early apples, pears and peaches to Great Britain by making it possible for shippers of small lots to co-operate in the filling of a cold storage chamber.

The money voted by Parliament for the purpose of conducting experiments in the cold storage of apples was partly used in the purchase of seven carloads of winter apples at different points in Ontario. They were cold-stored at London, Montreal and St. John, N.B. As the apples are not yet all disposed of, particulars of the experiments cannot be given in this report, but will be published in a special bulletin as soon as the information is available.

A plan has been prepared for a fruit cold storage to be equipped with mechanical refrigeration. Blue prints are now available for distribution.

Plans for cheese factories with cool curing rooms and creamery cold storage plans are still distributed to those who apply for them.

MEETINGS.

During the winter months the chief officers of this branch have spent a good part of their time in attending dairy and fruit meetings in the several provinces. The annual conventions of the provincial dairymen's associations and the provincial fruit growers' associations have been addressed in most cases by one or two and sometimes by three members of the staff. A very large number of special dairy meetings were attended during the months of December, February, March and April. The topics discussed at these meetings include 'The Cool Curing of Cheese,' 'The Improvement of Dairy Herds by Testing Individual Cows,' 'The Care of Milk for Cheesemaking,' and other similar topics. The use of lantern slides to illustrate addresses has proved very satisfactory. Mr. Barr has met with marked success in presenting in this manner the results of the experiments in the care of milk for cheesemaking (page 72).

The services of the permanent fruit inspectors have been utilized to good advantage by holding special fruit meetings and orchard demonstrations during the months of April, May and June. The demonstrations include spraying, pruning, grafting, &c. In Nova Scotia, the inspectors have assisted in the campaign for the eradication of the Brown Tail moth.

The total number of meetings attended and addressed by members of the staff during the year was 424. The organization and advertising of these meeting have, in most cases, been done in this office.

PUBLICATIONS.

Bulletins No. 22, 'The Cooling of Milk for Cheesemaking,' and No. 23, 'Cold Storage and the Cold Storage Act,' the monthly Fruit Crop Reports (May to September), and a plan for a small fruit cold storage to be equipped with mechanical refrigeration, constitute the publications of this branch for the year. All these publications are now available for distribution.

THE STAFF.

The staff whose work it is my privilege and pleasure to direct, consisted in 1909-10 of seventy-five persons of all ranks, as follows:—

Technical—

1 Assistant Dairy Commissioner.
3 chiefs of divisions.
1 chief fruit inspector.
26 fruit inspectors.*
6 assistants in dairying.
1 inspector of dairy products.
1 official referee of butter and cheese.
2 chief cargo inspectors.
12 cargo inspectors.†
3 refrigerator car inspectors.

Clerical—

1 secretary to the Commissioner.
5 stenographers.
11 clerks.
2 messengers.

—

75

Of this staff twenty-six persons are located at Ottawa and belong to the 'inside service.' The other forty-nine are in the 'outside service.' The Assistant Dairy Commissioner resides at St. Denis (en bas), Que. One chief cargo inspector, Mr. A. W. Grindley, is located at Liverpool, and the other, Mr. Wm. Macfarlane, is in charge of the Montreal office of this branch. Four cargo inspectors are employed permanently in Great Britain. The other cargo inspectors are located at Montreal during the season of navigation, and one is sent to Halifax during the winter months. The iced car inspectors travel over the routes followed by these cars. The Chief Fruit Inspector, Mr. M. R. Baker, resides at Ottawa, and is a member of the inside service The other fruit inspectors are located at different points throughout the country.

Of the assistants in dairying, Messrs. C. F. Whitley, in charge of Dairy Records, J. G. Bouchard and I. Trudel reside at Ottawa; Mr. Jos. Burgess, assistant for Ontario, resides at Woodstock, Ont.; Mr. Harvey Mitchell, assistant for the maritime provinces, at Fredericton, N.B., and Mr. J. N. Lemieux, assistant for Quebec, at St.

* Fifteen fruit inspectors are employed only during part of the year.
† Eight cargo inspectors are employed only during the period of navigation at Montreal.

Hyacinthe, Que. Mr. Lemieux also acts as refrigerator car inspector for a part of the year.

When the writer was first appointed to the staff of the Dairy Commissioner, on April 6, 1891, it consisted of the Dairy Commissioner, Professor James W. Robertson, the Assistant Dairy Commissioner, Mr. J. C. Chapais, and a stenographer. Other dairy experts, to the number of eight, were appointed later during the year. I quote from the annual report of the Dairy Commissioner for the year ended April 30, 1892, as follows:—

> I was fortunate in securing the services of some of the most capable, energetic and trustworthy men who were available. Messrs. J. A. Ruddick, T. J. Dillon, John Robertson, J. B. McEwan, C. C. Macdonald, C. F. Whitley and J. W. Wheaton were engaged. Their reports upon the work which was entrusted to their care are included in this volume. Mr. J. W. Hart was engaged as an expert butter maker, to give general assistance in experimental dairy work at the Central Experimental Farm and at the branch Experimental Dairy Stations.

Few people outside of the department realize the enormous growth of the routine work which has resulted from the increase in the staff and the enlarged scope of their operations during these years.

When the 'Dairy' branch was established by the appointment of a Dairy Commissioner in 1890, the only other agricultural work carried on by the department was that undertaken by the Experimental Farms Branch. The work of the branch related almost wholly to dairying for the first eight or nine years of its existence. In 1899, the first move towards expansion was made by the appointment of a Live Stock Commissioner, who was responsible to the Dairy and Agricultural Commissioner, as the head of the branch was then styled. In 1900, the Dairy Division was organized, when the writer was invited to return from New Zealand to assume the position of chief of that division. In 1901, four divisions were recognized, namely, Dairying, Live Stock, Extension of Markets and Cold Storage. During the following year the divisions of Fruit, Poultry and Seed were added, thus covering, with the Experimental Farms Branch, practically the whole range of Canadian agriculture. The branch was continued with these divisions until the end of 1904, when Dr. Robertson resigned his position in the public service and a reorganization was effected. The Live Stock and Poultry Divisions were made into a separate branch and the Seed Division was raised to the status of a branch, leaving the divisions of Dairying, Fruit, Extension of Markets and Cold Storage in the original branch.

The inauguration of new lines of work naturally attracted much attention from the farming interests and the public generally, and it was fortunate for the department and for the country that during these formative years the services of a man so eminently fitted for that kind of work as Professor James W. Robertson were available. It is desirable, however, that the difference should be recognized between the work of organization and the routine work which organization involves, and which is not only important, but absolutely necessary if real results are to follow the initiation of important movements.

These things have been referred to because there has been some tendency of late years, on the part of people who do not understand the situation, to attribute the

change in the character of our work to a lack of progressiveness in some respects. They overlook the fact that organization must be followed by careful and persistent work, with much repetition; otherwise, there is often no result. The announcement of a new policy attracts much more attention than the daily grind which gives effect to that policy. There is little use in straining after too many new things while there remains so much room for improvement along the old lines.

The writer's appointment as Dairy Commissioner dated from January 1, 1905, and a year later it was changed to that of Dairy and Cold Storage Commissioner. This title does not accurately represent the duties of the office, because there is no reference to the Fruit and Extension of Markets Divisions, which occupy exactly the same status in the branch as do the divisions of Dairying and Cold Storage. It seemed, however, to be the best possible designation that could be suggested.

ACKNOWLEDGMENTS.

I am pleased to record once more my high appreciation of the services rendered by members of the staff. The general record for punctuality, diligence and devotion to the work of the office is excellent. I am especially indebted to Mr. W. W. Moore, Chief of the Markets Division; Mr. A. McNeill, Chief of the Fruit Division, and Mr. Geo. H. Barr, Chief of the Dairy Division, for valuable assistance and loyal support in carrying on the work of the office. To these officers and to Mr. J. C. Chapais and Mr. C. F. Whitley, I am indebted for a large share of the work of preparing this report. The outside officers have been diligent and faithful in the discharge of their various duties.

I have to acknowledge kindly co-operation and assistance from the Division of Chemistry, of the Experimental Farms Branch, in connection with matters of a chemical nature.

Acknowledgment is also due the Department of Inland Revenue for analyses made in connection with the administration of the Butter Act of 1903, and to the Department of Public Works for draughting in plans for fruit cold storages.

J. A. RUDDICK,

Dairy and Cold Storage Commissioner.

PART I.—DAIRYING

PART I—DAIRYING.

THE SEASON OF 1909.

The season of 1909, which this report covers, presented no very marked features. The weather conditions were more favourable for production on the whole than they were in 1908, but the grass was very late in coming and the season somewhat shortened on that account.

The total exports for the fiscal year show an increase in the value of dairy products exported amounting to $1,262,716, as follows:

VALUE OF DAIRY PRODUCTS EXPORTED, YEARS ENDED MARCH 31ST.

	1909.	1910.
Condensed milk and cream	$ 90,520	$ 541,372
Butter	1,521,436	1,010,274
Cheese	20,384,666	21,607,692
Totals	$21,996,622	$23,159,338

If the value represented by the increase in home consumption is added to the increase in the exports, it will show a decided increase in the milk production for the year just ended.

VOLUME AND INCREASE OF HOME CONSUMPTION.

Few people seem to realize the importance or the extent of the consumption of dairy products in Canada. After a careful study of the matter, the annual consumption of milk, cream, butter, cheese and condensed milk is placed at $10 per capita, and that is believed to be a conservative estimate. On this basis, the value of dairy products consumed in the year under review must have been nearly $3,000,000 greater than it was in the previous year, or $22,000,000 more than it was in 1901. On the same basis, the total consumption of these products during the year would amount to $75,000,000. If we add to these figures the value of the exports, including cream, cheese and butter, during the year, which amounted to $23,159,338, we have the enormous sum of $98,000,00 as the probable total value of dairy production in Canada for the year.

MERE VOLUME NOT THE MOST IMPORTANT THING.

Canadian dairymen must be careful, however, not to allow a natural pride in the aggregate of their production to interfere with a full appreciation of the importance of individual achievement. There is some danger in a big country like Canada that the attractiveness of large figures may detract from the interest that should be directed to the details, which are of greater importance. The total quantity produced means very little. It is the amount produced per cow, or per acre of land devoted to dairying, which should receive most attention.

THE NEW ZEALAND COMPETITION.

Shipments of cheese from New Zealand to Great Britain are still increasing. It seems probable that the figures for the New Zealand season of 1909-10, when com-

pleted, will show a gain of 25 per cent, or something like 10,000,000 pounds over 1908-09.

It is satisfactory to note that the prices quoted for old Canadian and New Zealand cheese in Great Britain have shown a greater difference in favour of Canadian than for some years past.

If the present market conditions continue, there will be a tendency in New Zealand to turn the milk into butter instead of cheese.

THE EXPORT OF CREAM TO THE UNITED STATES.

Probably the most unusual feature of the season of 1909 was the inauguration of the shipment of cream to the United States. In the recent adjustment of the United States tariff the duty on cream was reduced from 2 cents a pound to 5 cents a gallon, and the duty on butter remains as it was, at 6 cents per pound. The duty on very rich cream amounts to about 1¼ cents per pound of butter. With the price of butter in the United States 4 or 5 cents a pound higher than it is in Canada, there is considerable margin for profit. In some cases the United Sates importers have dealt only with the factories, where the milk is received in the usual way and the cream separated from it. In other localities they have been dealing with the farmers direct, thus depriving the factory of its patronage. On the whole, the trade is not a desirable one from the Canadian standpoint. The individual producer who receives a higher return for his milk than he could get for it if it were made into butter or cheese on this side, will be satisfied as long as that condition continues, but the moment that a change in prices makes the trade unprofitable the market will be gone and the disorganization of the cheese factories and creameries will then be seriously felt.

The total amount of cream exported during the year ended March 31, 1910, was 2,362,221 pounds, valued at $220,446. As the cream is made very rich, this quantity represents over 1,000,000 pounds of butter. In some instances, representatives of United States establishments have offered contracts for the cream and also for casein made from skim-milk.

THE DEMAND FOR CASEIN.

The demand for casein in the United States has increased very largely during the year, although there has not been any material advance in price. The price varies according to the manner in which the casein is prepared, or to what extent the drying process is carried. The gross returns per 100 pounds of skim-milk vary from 20 to 22 cents. The process of making casein, which is really kiln-dried curd, leaves the whey for feeding purposes. It is claimed that the necessary plant for making casein (curd, dried, but not powdered) in addition to a cheese factory outfit, can be installed for $125. The vats are used for curdling the milk, and the presses for expelling the free moisture. The additional apparatus required consists of a dryer, or evaporating chamber. If casein is made at a creamery, the vats and presses will have to be provided.

INCREASED PRODUCTION IN PRINCE EDWARD ISLAND.

It is very gratifying to be able to report an increase of 30 per cent in the shipments of cheese from Prince Edward Island. There is a decided revival of interest in dairying in the island province and the business is being placed on a firmer and more profitable basis. More attention is being paid to the character of the cows which are kept, and the question of herd improvement is receiving considerable attention. Mr. Harvey Mitchell, dairy expert for this branch in the maritime provinces, has spent considerable time on the island to good purpose.

INCREASED PRODUCTION IN WESTERN PROVINCES.

The small number of creameries and cheese factories in the western provinces makes it possible to secure accurate returns of the annual production through the

officials of the provincial Departments of Agriculture, who are in close personal touch with each establishment.

A considerable increase in both cheese and butter production is reported from Manitoba.

The output of creamery butter shows an increase of over 50 per cent in Saskatchewan during the year. There are no cheese factories in Saskatchewan, but a large quantity of dairy butter is made on farms.

The creameries in Alberta also increased their output. There are now in that province over fifty creameries and eight or ten small cheese factories.

The business of dairying continues to expand also in British Columbia. There are 20 creameries, but no cheese factories.

WESTERN PRODUCTION NOT SUFFICIENT FOR LOCAL MARKETS.

The large increase in production west of Lake Superior is not sufficient to meet the increased demand in that part of the country, and heavy shipments of butter and cheese are being made from Ontario and Quebec to supply the shortage.

THE OFFICIAL REFEREE OF BUTTER AND CHEESE AT MONTREAL.

During every season since the year 1900, except in 1906, an officer of this branch has been stationed at Montreal to act as Official Referee of Butter and Cheese in cases of dispute between the buyer and seller as to the quality of cheese or butter sold subject to Montreal inspection.

The office was created at the urgent request of the salesmen in the several districts interested. Many salesmen believed that they were being unfairly treated by the Montreal merchants in the matter of claims for alleged inferior quality of butter and cheese, and they believe that the referee would save them very many, if not all, rejections of this kind. Their expectations have not been realized, for the simple reason that the referee is not called in unless there is some real defect in the butter or cheese in question. Because the referee was obliged to confirm the judgment of the buyer in most cases, many of the salesmen have concluded, rightly or wrongly, that the referee is of no advantage to them. The presence of the referee has, no doubt, prevented unfair claims from being made at times, but, on the other hand, the buyers were inclined to make use of the referee's certificate to relieve them of the onus of pronouncing against the quality of the goods.

At the beginning of the season of 1907 it was decided that the referee should not act in any case unless requested to do so by both the salesman and the buyer. Under the new rule the salesman had to be communicated with after the cheese or butter arrived in Montreal, and the result was that it was frequently a week or more from the time the cheese left the factory until they could be examined. As was pointed out to the salesmen before the rule was adopted, this delay was very much against the factory, because if there was anything wrong with the quality, it was getting worse every day. The delay in securing the consent of the salesman to the examination by the referee made the matter so unsatisfactory that during the past two or three years very little use has been made of the referee's services.

The presence of an expert butter and cheese maker in Montreal, to advise butter and cheese makers concerning defects found in their shipments from time to time, should be of great service to the dairy industry, but, unfortunately, the butter and cheese makers have not availed themselves of the services of this officer to the extent that it was hoped they would.

During the season of 1909 the office was filled by Mr. J. F. Tilley, the well-known butter and cheese instructor, of Woodstock, N.B. Mr. Tilley has submitted the following report of his season's work.

REPORT BY MR. J. F. TILLEY.

MONTREAL, December 1, 1909.

The Dairy and Cold Storage Commissioner.

SIR,—I herewith present my report as Official Referee of Butter and Cheese at Montreal for the season of 1909. The position of referee is necessarily attended with more or less unpleasantness, due to the fact that he has to act between buyer and seller, but I am pleased to state that, with one or two exceptions, my decisions were accepted without question. It was my aim, when issuing certificates for second or third quality of either cheese or butter, to write the maker or salesman regarding the faults found, giving him my ideas as to how they could be corrected. I also wrote the chief instructor each week, giving him the name of factory, location and brands of cheese or butter examined, with the faults, so that he could send an instructor to assist the makers that were in trouble.

LOTS OF CHEESE EXAMINED, BY MONTHS.

Months.	1st Grade.		2nd Grade.		3rd Grade.		Culls.		Total all Grades.	
	Lots.	Boxes.	Lots.	Boxes.	Lots.	Boxes.	Lots.	Boxes.	Lots.	Boxes.
May	1	21	1	50	3	56	.....	.....	5	127
June	.....	.....	20	749	3	81	.....	.....	23	830
July	1	4	63	3,269	12	557	.....	.....	76	3,830
August	2	80	23	1,053	1	20	.....	.....	26	1,156
September	3	30	41	2,017	1	15	.....	.....	45	2,062
October	.....	.....	21	921	.....	.....	.....	.....	21	921
November	.....	.....	1	31	.....	.....	.....	.....	1	31
December	.....	.....	2	83	.....	.....	.....	.....	2	83
	7	135	172	8,173	20	729	.....	.....	199	9,040

DEFECTS IN CHEESE.

The principal defects found in cheese were: 'not clean,' 'fruity,' 'off flavour,' 'weak,' 'loose,' 'open,' 'gassy,' 'acid' or 'sour,' 'mealy,' 'cracked or stained surfaces.'

Out of 199 lots of cheese examined, which represented 9,040 boxes, 7 lots, or 135 boxes, were graded 1st; 172 lots, or 8,173 boxes, were graded 2nd, and 20 lots, or 729 boxes, were graded 3rd. The second and third grade cheese were all faulty in flavour, due to either bad flavoured milk or poor starter having been used.

Another very objectionable fault and one which seemed hard to correct, was that many samples examined were weak in body and loose or open in texture. I found week after week that lots of cheese would come in from the same factories having this fault, which was almost invariably caused by an insufficient development of acid and salting too early.

Later in the season, another defect seemed to predominate, namely a soft and pasty cheese. This fault seemed to be due to insufficient cooking, or lack of stirring. These cheese almost invariably carried a bad flavour and could only be classed as very objectionable cheese.

The finish of the lots examined was generally good, excepting from some parts of Quebec, where they were irregular in size and carried too much bandage on the ends, which had a tendency to cause the purchaser to find fault.

DATING CHEESE.

As my predecessors have done, I wish to point out the fact that if the cheese were dated on the ends, instead of on the side, much more justice could be done to factorymen. If this were done and the vat number placed under the date, a much more accurate examination could be made. As the practice now is, no referee can give a correct report of the quality of cheese or butter by simply examining ten or twelve per cent of the packages. It is up to the makers to change this system, as no other individual has any control over the situation.

BUTTER.

Thirty-seven lots of butter, representing 1,174 packages, were examined during the season. Of these, 19 packages were graded 1st, 1,097 packages graded 2nd, and 36 packages graded 3rd. The chief faults found were: 'not clean,' 'old, sour cream flavour,' 'salvy, overworked,' 'mottled colour.' The finish and package were generally good.

In closing I wish to point out the fact that, owing to the necessity of the referee having to receive an order from the factory salesman before he is authorized to examine cheese or butter, much valuable time, as well as money, is sometimes lost through the delay, especially during a season when high prices prevail, as was the case this year. Buyers, as a rule, are not anxious to make cuts; neither is the referee anxious to give a report other than for first grade; consequently, if factory salesmen would at the opening of the season place a standing order with the referee to examine their cheese or butter when asked to do so by the buyer, they would place themselves in a much better position to get quick returns. I have seen thousands of boxes of cheese which were faulty passed by buyers, which had a tendency to deceive the maker, for when he received no cut from the purchase price, he naturally supposed his stock was all right. This method of doing business also has a bad effect on the export trade. It therefore seems necessary that the factoryman, buyer and referee should work together in order that good results may follow.

J. F. TILLEY,
Official Referee.

MILK TEST GLASSWARE SHOULD BE VERIFIED.

In the distribution of the proceeds from the sale of cheese and butter, at many of the cheese factories and creameries, the value of the milk or cream delivered by the different patrons is based on fat content, as shown by the Babcock and other milk tests. It is important, therefore, that the glassware used in connection with these tests should be accurately graduated and marked. During recent years there has been some complaint respecting the accuracy of this glassware, and it is important that provision should be made for its official verification on the same principle as that which provides for the inspection of weights and measures. Confidence in the accuracy of the test is necessary in order to encourage the more general adoption of the plan of paying for milk according to quality. I trust that the Bill which you have introduced into Parliament with a view of regulating this matter will be passed during the present session.

CHEESE IMPORTS INTO THE UNITED KINGDOM, FROM BRITISH TRADE RETURNS, YEARS ENDED DECEMBER 31ST.

From	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Canada	1,709,565	1,848,142	1,900,556	1,858,767	1,925,835	1,698,847	1,541,502	1,566,546
United States	390,479	360,916	224,830	175,256	233,445	114,300	105,555	54,617
Holland	284,020	302,503	233,601	214,033	229,341	241,551	279,401	285,329
New Zealand	51,875	56,339	84,947	78,626	126,216	192,301	264,995	368,531
Other countries	110,273	126,458	110,363	116,000	123,957	125,234	114,633	115,067
Total	2,546,212	2,694,358	2,551,297	2,442,682	2,638,794	2,372,233	2,306,086	2,390,090
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Canada	67·2	68·6	74·4	76·1	73·0	71·7	66·8	65·5
United States	15·3	13·4	8·8	7·2	8·8	4·8	4·6	2·3
Holland	11·2	11·2	9·1	8·7	8·7	10·2	12·1	12·0
New Zealand	2·0	2·1	3·3	3·2	4·8	8·1	11·5	15·4
Other countries	4·3	4·7	4·4	4·8	4·7	5·2	5·0	4·8
Total	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0

BUTTER IMPORTS INTO THE UNITED KINGDOM, FROM BRITISH TRADE RETURNS YEARS ENDED DECEMBER 31ST.

From	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Russia	490,091	484,328	404,717	461,140	606,549	657,649	639,118	601,712
Sweden	191,591	212,232	206,791	188,209	182,803	226,740	238,929	312,142
Denmark	1,703,032	1,771,654	1,708,619	1,630,363	1,675,761	1,818,811	1,857,103	1,764,027
Germany	26,375	12,507	4,080	5,372	10,701	7,297	3,195	2,965
Netherlands	393,261	343,761	252,262	209,897	195,366	168,496	244,376	148,567
France	414,240	454,088	371,061	348,442	319,401	281,306	394,612	413,366
United States	54,458	42,405	68,754	84,874	157,312	1,063	30,540	693
Australia	80,397	121,165	480,778	450,293	545,827	598,986	409,106	384,619
New Zealand	157,993	249,879	294,982	309,418	311,672	313,863	221,595	278,5 1
Canada	285,765	185,437	268,607	292,117	190,968	34,753	47,877	22,522
Other countries	177,730	183,238	180,354	176,741	140,898	101,192	115,590	133,699
Total	3,974,933	4,060,694	4,241,005	4,147,866	4,337,258	4,210,156	4,210,821	4,062,833
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Russia	12·3	11·9	9·5	11·1	14·1	15·6	15·2	14·8
Sweden	4·8	5·2	4·9	4·5	4·2	5·4	5·7	7·7
Denmark	42·8	43·4	40·3	39·3	38·6	43·2	44·1	43·4
Germany	0·6	0·3	0·1	0·1	0·3	0 2	0·1	0·07
Netherlands	9·0	8·5	5·9	5·1	4·5	4·0	5 8	3·7
France	10·4	11·2	8·7	8·4	7·1	6·7	9·7	10·1
United States	1·4	1·1	1 6	2·0	3·6	.03	0·9	0 01
Australia	2 2	3·2	11·3	10·8	12·5	14·2	9 5	9 5
New Zealand	3·9	6·1	6·9	7·5	7·2	7·5	5 3	6·9
Canada	7·2	4·6	6·3	7·0	4·4	0·8	1·1	0 6
Other countries	4·5	4·5	4·5	4·2	3·5	2·4	2 6	3·3
Total	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0

SESSIONAL PAPER No. 15a

TOTAL EXPORTS OF CHEESE AND BUTTER IN FISCAL YEARS 1880 TO 1910 INCLUSIVE.

Butter.			Cheese.		
Year.	Quantity.	Value.	Year.	Quantity.	Value.
Years ending June 30.	Lbs.	$	*Years ending June 30.*	Lbs.	$
1880	18,535,362	3,058,069	1880	40,368,678	3,893,366
1890	1,851,585	340,131	1890	94,260,187	9,372,212
1891	3,768,101	602,175	1891	106,202,140	9,508,800
1892	5,736,696	1,056,958	1892	118,270,052	11,652,412
1893	7,036,013	1,296,814	1893	133,946,365	13,407,470
1894	5,534,621	1,095,588	1894	154,977,480	15,488,191
1895	3,650,258	697,476	1895	146,004,650	14,253,002
1896	5,889,241	1,052,089	1896	164,689,123	13,956,571
1897	11,453,351	2,089,173	1897	164,220,695	14,676,239
1898	11,253,787	2,046,686	1898	196,703,323	17,572,763
1899	20,139,195	3,700,873	1899	189,827,839	16,776,765
1900	25,259,737	5,122,156	1900	185,984,430	19,856,324
1901	16,335,528	3,295,663	1901	195,926,397	20 696,951
1902	27,855,978	5,660,541	1902	200,946,401	19,686,281
1903	34,128,944	6,954,618	1903	229,099,925	24,712,943
1904	24,568,001	4,724,155	1904	233,980,716	24,184,566
1905	31,764,303	5,930,379	1905	215,733,259	20,300,500
1906	34,031,525	7,075,539	1906	215,834,543	24,433,169
Years ending Mar. 31.			*Years ending Mar. 31.*		
1907 (9 months)	18,078,508	4,011,609	1907 (9 months)	178,141,567	22,006,584
1908	4,786,954	1,068,703	1908	189,710,463	22,887,237
1909	6,326,355	1,521,436	1909	164,907,139	20,384,666
1910	4,615,380	1,010,274	1910	180,859,886	21,607,692

DETAILED STATEMENT OF EXPORTS OF CHEESE IN FISCAL YEARS 1902 TO 1910 INCLUSIVE.

(Years ending June 30, 1902 to 1906, and years ending March 31, 1907 to 1910.)

To	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.
	$	$	$	$	$	$	$	$	$
Great Britain	19,620,239	24,620,004	24,099,004	20,174,211	24,300,908	21,909,879	22,763,736	20,268,166	21,481,566
Australia	6,862	6,913	6,247	5,411	5,350	245	525	223	171
British Africa	868	2,514	7,559	10,612	16,623	18,261	16,362	12,466	16,425
B. W. Indies	18,542	44,674	34,253	36,176	25,509	13,666	27,533	26,940	24,035
B. E. Indies	60	40	315	62	20				
British Guiana	1,833	2,165	1,193	2,571	3,860	3,143	6,228	4,452	5,232
Other British Possessions	746	553	216				9	1	1,011
Hong Kong		161	1,253	1,079	1,029		851	2,452	733
New Zealand	216	983	1,039	1,642	1,795	1,690	1,362	549	1,267
Newfoundland	20,100	21,334	21,754	35,171	30,992	37,748	35,792	41,163	36,912
Belgium			10	22	287		2,080		
Argentina		14							
Cuba	350	331	211	102	811		57		17
China	1,409	1,734	1,899	2,013	2,195	2,206	1,572	568	756
Danish West Indies	332	2,037	1,936	2,046	2,056	1,568	1,985	1,937	2,453
France			44	700	7,203		10	81	
Japan	821	1,076	1,609	759	775	1,071	1,444	2,200	1,208
Philippine Islands		289	100						
St. Pierre	158	120	356	341	875	318	190	364	311
United States	12,038	7,779	5,386	14,182	16,082	6,900	17,732	19,428	23,995
Dutch West Indies	538								
Norway and Sweden				104	994				
Germany	1,179	170		364		54	3		102
Bermuda				12,505	14,033	9,080	9,245	3,174	11,385
Dutch Guiana		15	23	18	13	9			
Egypt		30							
Mexico			159	329	1,594	630	168	499	108
French West Indies		7							
Central America				80			347	3	
Holland					97	110			
U. S. of Colombia					68				
Other countries							6		5
Totals	19,686,291	24,712,943	24,184,566	20,300,500	24,433,169	22,006,584	22,887,237	20,384,666	21,607,692

DETAILED STATEMENT OF EXPORTS OF BUTTER IN FISCAL YEARS 1902 TO 1910, INCLUSIVE.

(Years ending June 30, 1902 to 1906; years ending March 31, 1907 to 1910.)

To	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.
	$	$	$	$	$	$	$	$	$
Great Britain	5,459,300	6,554,014	4,400,774	5,568,999	6,802,003	3,805,925	823,761	1,273,484	587,493
British West Indies	71,816	112,968	127,790	80,323	87,085	59,313	85,371	95,370	76,026
British Guiana	6,796	7,565	6,412	8,929	11,654	8,113	12,861	7,711	9,497
Other British Possessions	284	72					5		544
Hong Kong									
Newfoundland	47,066	69,017	82,422	82,387	48,283	56,516	34,931	54,552	50,074
China	78	141	1,763	562	761	5,041	1,319		
Cuba	243	202	796	658	285	1,034	720	96	22
Danish West Indies	1,581	6,077	5,868	4,473	4,560	3,664	4,939	4,418	4,697
French West Indies		1,020							
Germany	101	13	25,644						9,777
Hawaii		115							
Hayti		38							
Japan	1,013	1,816	6,027	6,496	9,373	9,062	4,258	3,019	1,002
St. Pierre	27,102	28,655	26,598	21,827	17,668	17,615	18,749	14,740	14,036
United States	41,149	10,225	6,497	70,580	33,965	3,539	38,899	18,246	199,854
British Africa	12	133,958	16,417	4,914	2,056	265		22,458	1,873
Mexico		4,685			1,268	484	265	660	936
Brazil	1,608	9,084							
Dutch West Indies	2,040								
U. S. Colombia	92	1,175	2,272	200	1,747	2,145		1,105	832
Australia	260	6,187							
Bermuda				50,482	47,045	33,900	33,177	14,273	43,638
France			14	14,440	4,155				
San Domingo		1,351							
Holland			8,175	13,680					
Venezuela		6,240							
Belgium			10	116					
Central America			686	1,062	3,431	4,932	9,448	7,074	2,590
Corea				15					15
Dutch Guiana				186	30	40			48
Turkey				50		21			
Porto Rico					170				
Panama								4,229	7,320
Austria-Hungary								1	
Totals	5,660,541	6,954,618	4,724,155	5,930,379	7,075,539	4,011,609	1,068,703	1,521,436	1,010,274

REPORT OF THE ASSISTANT DAIRY COMMISSIONER.

To the Dairy and Cold Storage Commissioner.

SIR,—To-day, March 31, marks the close of the twentieth year that has elapsed since I was appointed Assistant Dairy Commissioner for the Dominion. I have devoted this part of my life, as understood at the time of my appointment, to the progress of dairying in the French sections of the Dominion, especially the province of Quebec. As I have presented a report of my work every year, the present one will be the twentieth I have made as Assistant Dairy Commissioner. It covers the period of twelve months from April 1, 1909, to March 31, 1910.

SUMMARY.

During the past year I have made 109 visits to 91 localities in 35 counties, in the provinces of Manitoba, Ontario and Quebec, and have delivered 113 lectures before 17,585 persons, 164 of whom were butter or cheese makers. The average attendance at these lectures was 155. Of the 91 places I visited 23 for the first time. I have travelled 10,714 miles in performing my work.

PROVINCIAL MEETINGS.

The first provincial meeting I attended during the past twelve months was the annual convention of the Agricultural Missionaries of the Province of Quebec, held at Oka, July 13 and 14, 1909. At that convention I lectured on 'Farm Manure.' On the 14th of the same month I was present at the organization meeting of the Quebec Farmers' Experimental Union, at the Oka Agricultural Institute. On August 24 and 25 the summer convention of the Pomological Society of the Province of Quebec was held at the Institute, at which I delivered a lecture in French and English on 'The Renovation of Old Orchards.' On August 25, at the same place, I attended the summer meeting of the Quebec Society for the Protection of Plants and delivered a lecture on 'Climate and Insects' in English and French. On the 26th of August, at the same place, I was present at the first regular meeting of the Quebec Farmers' Experimental Union. I went to Macdonald College, Jacques Cartier County, to attend the winter meeting of the Pomological Society of the Province of Quebec, on December 9 and 10, 1909, and delivered a lecture there in English and French on 'The Forest and the Farmer.' On January 11 and 12, 1910, at the annual convention of the Quebec Dairymen's Association, I delivered an address on 'Axioms, Sayings and Legends in Dairying,' of which the following is a summary:—

Definition.—The legend of the general purpose cow.—The legend of the cow with an immense yield of milk.—The bull and the herd.—The waning moon and its effect on calves.—The calf's owner should not know the sound of its voice.—A calf should never lose its calf's fat.—Feed and milk fat.—Cold vs. milk yield.—Does thunder cause acidity in milk?—Cleanliness is a virtue.

On February 8, 1910, upon a special invitation from the Society of Social and Political Economy of the Province of Quebec, I delivered, at Laval University, Quebec, a lecture on 'The Forest and the Farmer.' The winter convention of the Quebec Society for the Protection of Plants took place at Macdonald College, on March 16, 1910. Having been invited to attend it, I delivered a lecture there on 'The Carrot Fly,' in English and French. This was the last of the nine provincial meetings attended during the past twelve months, at which I delivered 19 lectures.

COUNTY AND DISTRICT MEETINGS.

This year I attended twenty county and district meetings. The first was held by the Horticultural Society of Megantic County, at Inverness. I had been appointed by the Pomological Society of the Province of Quebec as a delegate to that

meeting, which took place on Septen ber 9, 1909, in connection with the horticultural exhibition held the same day. I delivered a lecture there on 'Horticulture and Fruit Growing.' I attended a similar meeting at St. Jean Port-Joli, on September 28, 1910, the day of the horticultural exhibition under the auspices of the Horticultural Society of L'Islet County. The third district meeting to which I was invited was one held at Ste. Anne de la Pocatiere, Kamouraska County, on December 20 and 21, 1909, when the classical college at that place celebrated the 50th anniversary of the foundation by the late Abbe F. Pilote, then superior of the college, of the first agricultural school in the Dominion of Canada, which was the second opened in America. The fourth county meeting I attended was the annual convention of the Horticultural Society of Kamouraska County, which was held on Feburary 22, 1910. The other county and district metings I attended were those of a series of

FARMERS' INSTITUTE MEETINGS

arranged for by the Live Stock Commissioner, by direction of the Honourable the Minister of Agriculture, from March 1 to March 11, 1910, in the following localities in the province of Quebec: L'Ancienne Lorette, Quebec County; St. Clair, Dorchester County; St. George, Beauce County; Ste. Famille, Island of Orleans, Montmorency County; St. Raphael, Bellechasse County; St. Jean Port Joli, L'Islet County, St. Pascal, Kamouraska County; St. Arsene, Temiscouta County; and Bic, Rimouski County. In this series I delivered sixteen addresses, dealing with 'Dairy Hygiene,' and 'Weeds.' I had as fellow lecturers during this trip Messrs. J. H. Grisdale, Agriculturist, of the Central Experimental Farm, Ottawa, and Luc Dupuis, Apiculturist, of Village des Aulnaies, L'Islet County.

LECTURES TO FARMERS' CLUBS.

As usual, the greatest part of my lecture work was done for farmers' clubs, which are so numerous in the province of Quebec, and give so much help to lecturers in disseminating agricultural knowledge amongst the farming community.

I had a special call this year to lecture on the development of wheat culture in the adjoining counties of Nicolet and Yamaska. As dairying in all its branches has been carried on in that section of Quebec for the past forty years, the soil is in very good condition and many farmers can now grow crops of wheat. As they have very good roller mills in operation, which makes first-class flour, they will find that wheat growing will enable them to bake their own bread, which will mean a great saving for them.

The addresses given before most of the farmers' clubs in other countics were especially on 'Weeds and their Eradication.' I have devoted special attention during the past year to a campaign against weeds, because they are now becoming the curse of agriculture in the Dominion.

Other subjects treated before the clubs were:—'The Selection and Care of Dairy Cows'; 'The Care of Milk'; 'Hand Separators on the Farm'; 'Horticulture and Fruit Growing'; 'The Forest and the Farmer'; 'Rural Economy'; 'A Study of the Causes of the Decrease in Dairy Exports'; 'Dairy Hygiene.'

I have delivered fifty lectures in all before the farmers' clubs in the province of Quebec.

ADDRESSES AT PARISH MEETINGS.

At parish meetings, during the period covered by this report, I delivered twenty-four lectures, five of which were given in the province of Quebec (where there are now very few parishes without a farmer's club), five in Prescott County, Ontario, and fourteen in the province of Manitoba. At the meetings in Quebec I spoke on the same subjects as were dealt with before the farmer's clubs. In Prescott County, Ontario, I

spoke chiefly on 'The Causes of the Decrease in Dairy Exports' and on 'Weeds and their Eradication.'

As to Manitoba, I have prepared a report of my trip and my work in that province.

A TRIP TO MANITOBA.

In accordance with instructions received from the department, I started on June 9th for the province of Manitoba, where I was requested to deliver a series of lectures on agriculture and dairying in the French settlements of the Red River Valley, around Winnipeg. I began my work in that province on Saturday, June 12, and finished it on June 30. In that period I visited the following localities:—Isle des Chenes, La Broquerie, Letellier, Lorette, St. Charles, St. Eustache, St. François-Xavier, St. Jean Baptiste, St. Malo, St. Norbert, St. Pierre Joly, Ste. Agathe, Ste. Anne, Ste. Elizabeth, and Winnipeg.

I travelled through the whole country covered by these fifteen localities, in order to get a good knowledge of the system of farming followed, to obtain information about the quality of the land and the cattle kept on the farms, and especially to examine the weeds, which are much too numerous. After travelling through these localities I gave in each one, except Winnipeg, an address on the subject which I considered of the greatest interest to my hearers.

The following is a short summary of my lectures.

A RETROSPECTIVE GLANCE.

In 1892, I delivered a series of lectures in Manitoba at all the places but two that I visited this year. I then advocated mixed farming and dairying as two things to which farmers would have to give their most serious attention, for two reasons. The first was that a farmer cannot go on cultivating wheat for many years without improving the soil, rich as it may be. The second was that continuous wheat growing for years on the same soil, without following a system of rotation, favours necessarily the growth of weeds, and once the great fields of Manitoba were infested with weeds, the quality of wheat would fall below the standard, its cultivation would become very difficult, the yield would be greatly diminished. I concluded by saying that as soon as the soil showed signs of exhaustion and became infested with weeds, the Manitoba farmer would find it a very hard and costly job to restore fertility to the land and to fight the weeds.

Unfortunately, I have found during my recent trip that all the evils of a too extensive system of wheat growing, which I had predicted as impending in 1892, are now becoming a reality. At a meeting in one of the localities I visited in that year, I asked the farmers to tell me what was then the average yield of wheat on an acre of their land, and they answered that it was twenty-five bushels. When I put the same question to the same farmers in the same locality this year, they answered that the present yield was only fourteen bushels.

In the same locality in 1892 I told the farmers that I had found that they were beginning to have weeds in their fields of wheat, especially Canada thistle and French weed. When I asked them this year about the condition of the fields as to weeds, they told me that their lands were now completely invaded by six of the worst weeds to be found anywhere.

ROTATION OF CROPS.

Having spoken of mixed farming and cattle raising as a necessity of the Manitoba farmer if he wishes to retain the fertility of his land and to get rid of weeds, I must now say a word about the rotation to follow in order to establish this system of farming on the land.

A rotation for the eradication of weeds always means a short rotation of about four years. Supposing that we have to apply a regular rotation to a piece of land infested with sow thistle, we would begin to work it as early as possible in the spring,

plonghing, harrowing, cultivating, rolling, ploughing again, and then seeding heavily with vetches, pease and oats at the end of June or the beginning of July. I would use that as green fodder early enough in the fall to be able to plough and harrow before the frost comes. That would be for the first year of the rotation. The following spring I would sow wheat with clover and timothy. The third year I would grow a crop of hay and afterwards have the meadow grazed by cattle and sheep till the frost came. The fourth year I would again keep the animals on the pasture and would, early in the fall, plough, harrow, cultivate and give a second ploughing before the frost came. I do not think any weeds would survive such a treatment.

With that system there is no bare fallowing; that is to say, there is no year without a crop; we would avoid frittering away and exhausting the soil by too frequent summer fallowing; we raise less wheat, but we have an abundance of feed for dairy cattle and sheep, and we have veal, mutton, butter or cheese, wool and grain to sell, and some wheat, with the satisfaction of living on clean, fertile land that will retain its cleanliness and fertility for years. Such a system is, we think, worth trying.

A VISIT TO WINNIPEG.

At the beginning of this report I stated that I delivered a lecture in all the localities visited except Winnipeg. My visit to Winnipeg was the result of an invitation I received from Mr. Jacques Parent, of Letellier, to visit the Manitoba College of Agriculture. Mr. Parent is a director of that institution, which is situated near Winnipeg, and was to accompany me, but he was suffering from a serious illness at the time of my visit and Mr. J. P. O. Allaire, of St. Boniface, came with me. We were kindly received by Mr. W. J. Black, B.S.A., the principal of the college, who took us through all the various departments. We saw none of the students, as it was vacation time, but we spent a pleasant afternoon with Mr. Black, who very kindly answered all our questions about the courses at the college. While there I noticed particularly an experiment that is being made with some specimens of the notorious brown rat that has lately invaded the southern part of the province of Manitoba, in order to ascertain the effect on these animals of inoculation with a serum which, it is hoped, will destroy that pest.

We found that the Manitoba Agricultural College is an institution of which Manitobans have reason to be proud. It was opened in the year 1906, and the authorities are already speaking of increasing the capacity of the institution, so numerous are the applications for admittance to the courses. I beg Principal Black to accept my best thanks for his cordial reception.

ACKNOWLEDGMENTS.

In closing this report of my trip to Manitoba, I wish to express my gratitude to Messrs. Jacques Parent, of Letellier; J. P. O. Allaire, of St. Boniface, and George Caron, of St. Charles, for the trouble they took to make my trip as useful and pleasant as possible, and to thank the reverend parish priests of the various localities I visited, for their hearty reception and for having, most of them, placed the church halls at my disposal for meetings.

VISITS TO COLLEGES AND SCHOOLS.

Eight of the addresses delivered this year were given to students at Oka, Plaisance and Macdonald College. The subjects discussed were some of those already mentioned in this report.

FACTORY INSPECTION.

I generally devote a good part of the months of May and June to the inspection of cheese and butter factories and to lecturing on the care of milk to the patrons of the factories visited; but this year I had to cancel my engagements for this kind of work in three syndicates, on account of my trip to Manitoba. For that reason I inspected only eight factories.

OFFICE WORK.

My office work this year has been more arduous than it generally is, owing to the fact that I had to travel much more than usual, and had to write many lectures, papers, memoranda and articles, in response to numerous requests for such work, as mentioned in the following list:—

Arbor Day (article in French).
The 3,000-pounds Cow (article in English and French).
Three Foes of Quebec Dairying (article in English and French)
A Talk on Sheep (article in French).
Nineteenth Annual Report of the Assistant Dairy Commissioner (a report in English and French).
Heating of Whey (an article in French).
Some Advice for the Haying Season (article in French).
Two Weeds (article in French).
Cheese as Food (article in French).
Dairying: a Short Chronicle (article in French).
Hauling Milk to Factories (article in French).
Renovation of Old Orchards (a lecture in French and English).
Climate and Insects (a lecture in French and English).
Report on Dairying in New Zealand (article in French).
Increase in Dairy Cattle Raising (memorandum in English).
A Trip to Manitoba (report in English).
Historical Notes on Quebec Dairying (memorandum in English).
Hygiene in Dairying (a lecture and paper in French).
Influence of Bad Weather in 1909 (article in French).
Winter Dairying (article in French).
Report of the Summer Meeting of the Quebec Society for the Protection of Plants (a paper in English and French).
Domestic Pasteurization of Milk (article in French).
Trouble in Cream Churning (correspondence in French).
Weeds (a lecture in English and French).
Hoard's Dairyman and Hand Separators (an article in French).
The Carrot Fly (an address in French and English).
Some Advice for Arbor Day (article in French).
A Short History of Dairying (article in French).
Better Methods for Quebec Dairy Farmers (paper in English).
Twentieth Annual Report of the Assistant Dairy Commissioner for the Dominion (report in English and French).
The Forest and the Farmer (address in English and French).
Farm Manure (lecture in French).
Wheat Culture (lecture in French).
Axioms, Sayings and Legends in Dairying (a lecture in English and French).
Horticulture and Fruit Growing (lecture in French).
Origin of French Canadian Dairy Cattle (memorandum in English and French).

This shows a total of 44 papers and articles written in French or English, 31 of which were on dairy topics.

CONCLUSION.

Before closing this twentieth report of my work as Assistant Dairy Commissioner, I think it may prove of some interest to those whose duty it is to promote the welfare and progress of the Dominion dairy industry to be able to find at a single glance what my share in that work has been. In the short and very condensed summary given below they will see that from April 1, 1890, to March 31, 1910, I have travelled through five of the Dominion provinces, Prince Edward Island, New Brunswick,

Quebec, Ontario and Manitoba, and have done the amount of work indicated in the following figures:

Provinces visited	5
Counties visited	89
Lectures delivered	3,144
English lectures	436
Farmers met	300,668
Makers met	9,440
Miles travelled	214,918

With these remarks I conclude my twentieth report, which I hope will meet with your approval as showing part of what our branch of the Dominion Department of Agriculture has done for the progress and welfare of the French dairymen and farmers of the Dominion in the period between April 1, 1890, and March 31, 1910.

I have the honour to be, sir,
Your obedient servant,

J. A. CHAPAIS,
Assistant Dairy Commissioner.

Saint Denis (en bas), County of Kamouraska,
March 31, 1910.

THE COW TESTING MOVEMENT.

The campaign to promote the testing of individaul cows has now been in progress for five years. A great deal of educational work has been necessary to create an interest in the question and to bring cow owners to the point of realizing the importance of studying the productive capacity of the individual animals in their herds. A rather disappointing feature of the work, so far, is the number of farmers who have begun testing only to discontinue after a few months, or at the end of the first year. It is satisfactory to find, however, that many of these backsliders are taking it up again with a better understanding of the question, and, in consequence, with a better prospect of securing tangible results.

Publicity has been recognized as one of the most useful agencies in attracting attention to and creating an interest in this work and with that end in view, numerous press paragraphs dealing with the subject in its various aspects have been scattered broadcast among the agricultural and weekly papers throughout the country.

The standing offer to supply the blank record forms to all who apply for them has been met with hundreds of applications from farmers who propose to conduct tests on their own account, and independent of the cow testing associations.

By comparing herd records from year to year, numerous cases have been found which show substantial increases in the average yields. The owners of these herds have been invited to give their experiences and to state what means have been employed to secure such satisfactory results. Some typical replies will be found in the following pages.

One point in this connection cannot be too strongly emphasized, and it is this, that an increased yield generally means so much additional clear profit. For the purpose of illustration, let us suppose that the average yield of a certain herd is 3,500 pounds of milk a year, having a value of $35. If it costs $30 in feed to produce this quantity of milk, the net profit is $5 per cow. If the average yield should be increased by 500 pounds, at a value of $5, the profit would be practically doubled; or, in other words, the profit from a herd of 10 cows giving 4,000 pounds a year would be equal to that from a herd of 20 cows yielding only an average of 3,500 pounds.

The importance of keeping an account of the feed is not being lost sight of, and a

fair number of those who are testing their cows have been supplied, on request, with blank forms for feed record purposes.

The plan of our operations at present may be stated in a few words. The owners of herds are encouraged to form associations or groups, so that there may be a sort of co-operation in having the tests made. Speakers are sent to meetings called for this purpose. Each member must supply his own outfit, consisting of a scale, and one bottle for each cow, to hold the composite sample which is tested for percentage of butter fat. Once a month these bottles are delivered to the person who makes the test, and who is paid for doing so by the Department of Agriculture at the rate of 5 cents per test. The department also supplies the acid used in making the tests and the chemicals for preserving the samples, as well as the blank record forms. When each monthly test is completed the results are forwarded to this office, where the calculations are made and entered in the permanent record books. A copy of his test is then returned to each member, with the totals to date, of milk and fat, for each cow.

Supervisors are employed, one each in Ontario and Quebec and one for the maritime provinces. These experts visit the testing centres to see that the work is done properly and with reasonable despatch, and to confer with individual farmers as far as possible.

Every effort is made to secure the co-operation of factory owners, cheesemakers and buttermakers, as the factories are the natural centres from which this movement should derive strength and support. We find it most successful where some such person in the locality takes an active interest in it.

Mr. Whitley has prepared the following report from the records of the past year.

THE RECORDS OF THE COW TESTING ASSOCIATIONS FOR 1909.

GENERAL.

The work of the cow testing associations has been carried on during the past year with decidedly increased interest. In addition to new associations, and new members in old associations, several old members who had discontinued weighing and sampling have again taken up the plan. A very large number of individual farmers have been supplied with milk record blanks and are taking weights regularly, but as they are not forwarding copies to the department, their records are not included. One dairy supply house alone reports over one thousand inquiries in two months for scales and Babcock testers.

In order to provide for a step in advance in connection with cow testing, a simple feed record form has been prepared and widely distributed to aid in compiling the cost of feeding the cows whose milk is being recorded. As cows vary in the quantity of milk produced for the feed consumed, it is important to know which cows give the best results in this respect.

The special feature of this year's report is the publishing of some details in connection with several herds where there has been a very satisfactory increase in the yields of milk and butter fat as the direct result of the use of this simple but effective plan of weighing and sampling the milk of each cow in the herd.

In addition to attending annual meetings of the members of cow testing associations, many other meetings have been held in response to requests for information concerning the keeping of dairy records. At all of such gatherings inquiries were eager and numerous regarding the feeding of dairy cows, particularly with reference to ensilage, roots and alfalfa. From discussions at such meetings, it is apparent that closer attention is being given to the care and handling of dairy stock, as well as to cleanliness, light and ventilation in cow stables. Correspondence on the subject is steadily increasing.

There appears to be a growing interest in the question of testing milk in cheese factory sections, indicating a spread of the movement in favour of the equitable system of payment for milk by the butter fat test instead of by weight.

The best averages of herd production occur where there is the tendency towards keeping grades of one breed only in lieu of an assortment of four or five breeds. This high level production seems usually to go hand in hand with unswerving allegiance to one good fixed type rather than continually chopping and changing in search of some new fancy.

The urgent need of many sections where the tendency has been cheapness rather than merit is an awakening to the necessity of using only a good, pure bred sire if there is to be real, definite herd improvement. Two or three neighbours could easily co-operate in purchasing a carefully selected specimen, and may rest assured of quick cash returns in the extra flow of milk.

INCREASED INTEREST IN PRINCE EDWARD ISLAND.

Another feature of the year's work is the remarkable increase of activity in the province of Prince Edward Island. The supervisor of cow testing for the maritime provinces, Mr. Harvey Mitchell, has been obliged to spend much of his time on the island to meet the demand for information and for assistance in the organization of new associations. It is gratifying to be able to add that this is only one of the signs of new life in the dairy industry of Prince Edward Island.

Two other supervisors have been continuously at work in Ontario and Quebec.

RECORDS SHOULD BE KEPT FOR THE COMPLETE YEAR.

Only total yields of milk and butter fat for the full period of lactation or for twelve months' production, are given in the report this year, instead of including yields of shorter periods as in previous years. Records of many hundreds of cows were sent in for only a few months. Several of such records show very good yields; for instance, there are cows of excellent promise giving over 1,190 pounds of milk per month for five and six months in succession; in six months many grade cows are credited with over 7,000 pounds of milk and 250 pounds of butter fat.

In one herd are three good yields in June from 3 grade cows: 1,750 pounds of milk, testing 3·2; 1,830 pounds testing 3·3, and 1,790 pounds of milk testing 3·1. It is much to be deplored that a great many of the most promising records cannot be included simply because they are lacking for 3 or 4 months; several of such incompleted records show 6,000 and 7,000 pounds of milk in 8 months and the cow still giving 500 and 600 pounds per month, indicating large total yields.

It is desired again to call particular attention to the need of keeping records *for the whole period of lactation*, and not simply for a few months. If any close estimate of profit is to be arrived at, it is useless to make only a guess at the production of milk and fat for four or five months, while but a very little extra time, seeing that figures are already available for seven or eight months, will give definitely the whole year's result, making the completed totals of infinitely more value to the owner himself, besides rendering valuable service to dairymen all over Canada through making it possible to compare results of hundreds of more herds.

Suppose, for instance, that the factory does not open till April, but many cows have freshened in February and March; now, instead of waiting till the real rush of farm work is on and delaying the taking of weights and samples in many cases as late as May, would it not be very simple to commence weighing just as soon as the first cow freshens? Even if it is not possible to get samples tested, there would be distinct advantage in knowing the weight of milk given by each cow for that opening period. this would lead gradually, as each cow freshens, into the weighing and sampling for all the herd. thus avoiding any feeling of a sudden and extra burden of work.

Similarly when the factory closes, plenty of milk may still be obtainable from three or four cows in the herd, and it often happens that the recording of these weights of milk which were hardly considered worth noticing may bring up the total yield of one or two individuals surprisingly, often forcing one to modify his views as to the best individual. The cow that has the commendable faculty of sticking closely to her business as a milk producer for a lengthy period, though the quantity given daily may not be particularly heavy, may far outshine another animal with a brilliant but brief record. The cow is not to be judged simply by a heavy yield under most favourable conditions in May or June; it is necessary to know the total yield during the twelve months before her value as a profitable animal can be really computed. Let us repeat and emphasize; that hitherto neglected yield of the odd months, either at the beginning or end of the lactation period, should be taken note of, for it may make considerable difference in calculating profit per cow.

WHAT COW TESTING MEANS IN CASH.

A survey of the work accomplished during the past year prompts the inquiry, what is the significance of this work as regards income for Canadian dairymen? As shown further on, several men have made substantial increases in three and four years, amounting to from 13 per cent up to 60 per cent in the yield of milk. It should be easy, with concerted action, to achieve a general increase of at least 10 per cent in the yield from all the cows in the Dominion. Even this moderate increment would assume the astounding proportions of an additional ten millions of dollars from the present number of cows. This is well worth seriously considering. That enormous sum is within the grasp of our farmers for but a trifling expenditure of cash, and a few hours work per year—just a little applied intelligence.

Every man of influence who wishes to see our dairy farmers prosper should realize the importance of this simple but far reaching plan and make it a point to recommend the proposition to every farmer in his neighbourhood.

As the members of the Scottish Agricultural Commission on their recent visit to Canada justly remarked, 'The contrasts in the yields of dairy herds are simply bewildering, while the average yields compare most unfavourably with Scottish and Danish records.' When we are rebuked like this it is high time for all factory men, all instructors, all dairy farmers to wake up, to pull together, and to take up cow testing in real earnest. Fortunately we have not far to seek for good patterns, for excellent models; plenty of good individual cows are to be found in practically every province, whose yields are up to 18,000 pounds of milk and even higher, while in many districts throughout Canada are good herds of selected and well fed cows, built up through a study of dairy records, and giving from 7,000 to 10,000 pounds of milk per cow. With satisfactory evidence of such actual attainment there is every possible inducement for our 'average' dairyman to go in and win. It is not so much a question of cash outlay as the application of method and system.

MAKERS AND FACTORY OWNERS SHOULD BE INTERESTED.

Cow testing is distinctly and immediately of value to every factory owner, for several good reasons. If farmers supply more milk or cream from a given number of cows or a certain number of acres, it means that by receiving more raw material from the same territory there is a lessening in the cost of hauling and a lowering in proportion of the expense of making, while a longer factory season is possible as the milking period is extended. Further, directly a patron begins testing each cow individually he commences to take far more interest in the herd and is likely to supply not only more, but a far better quality of milk or cream, cared for better.

With the strong probability of having the milk in the vats in far better condition every day, thereby facilitating his work at every step, it is clearly of great importance to every cheese and butter maker to follow this matter up and make it a point to interest every patron in cow testing.

DAILY WEIGHING AND LARGER YIELDS.

The practice of daily weighing appears to be steadily on the increase amongst the members of associations who commenced the system of weighing on only three days every month. This is very gratifying, indicating, as it does, the laudable growth of interest in the main feature of cow testing—a constant and critical study of each individual cow in the herd. Daily weighing has always been the object in view when the associations were first introduced and has been strongly and persistently recommended when explaining cow testing to inquirers.

Daily weighing has several commendable features. First and foremost, it calls immediate attention to any great fluctuation in yields of milk. The whole herd may have been affected by something preventable, exposure to a cold rain for example, or by something that could not well be prevented; but in many cases a difference that might remain undetected if no weights at all were taken for a week or ten days would be noticed at once in the yields of certain cows. This stimulates instant inquiry as to the disturbing element and prompt application of preventative measures. Again, the hired help may be careless or even abusive, but with a knowledge that the eye of the master is on the detailed account of every milking there is a strong incentive to milk more thoroughly and treat the stock humanely; indeed an extra 500 pounds of milk per cow can often be obtained just by this necessary attention to clean milking.

Further, and very important, an intelligent scrutiny of the records will frequently call attention to a case of impending sickness, and a simple but prompt remedy may institute a double saving, a prevention of further shrinkage in yield, and an avoidance of an urgent call to a distant and possibly expensive veterinary surgeon.

The daily record betokens a close personal interest in each cow and the general conduct of the whole pursuit of dairying that cannot possibly fail to have telling and profitable results. Attention to detail is never so well repaid in the dairy as when watching vigilantly the possibilities and varying temperament of each cow in the herd. A daily record means close oversight of each detail of the business, a sure forerunner of success.

No one expects to find good, heavy producing cows in a herd where no records are kept, but the well kept record is an instant index of ambition on the owner's part for increased yields and an assurance of good prices from any purchaser.

The following tables include the records of those cows tested for a full period of lactation, and of those cows tested a full twelve months and still giving milk.

TABLE I.—Comparisons between Herds in the Province of Ontario for the Full Period of Lactation, 1909.

NAME OF ASSOCIATION.	Herd.	No. of Cows.	TOTAL YIELD OF HERD.		AVERAGE YIELD PER COW.			YIELD OF BEST COW.				YIELD OF POOREST COW.			
			Milk.	Fat.	Milk.	Test.	Fat.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.
			Lbs.	Lbs.	Lbs.		Lbs.	Lbs.		Lbs.		Lbs.		Lbs.	
Avonbank	A	9	55,467	2,060·1	6,163	3·7	228·9	7,749	3·6	285·9	7	4,571	3·7	173·4	3
"	B	7	44,199	1,499·6	6,314	3·3	214·2	7,666	3·5	269·5	7	5,472	3·1	169·9	8
"	C	5	30,980	1,155·4	6,196	3·7	231·0	8,960	3·2	289·5	3	4,600	4·0	185·7	2
"	D	15	89,764	3,193·7	5,984	3·5	212·9	8,610	3·2	279·9	5	3,165	3·7	113·7	2
"	E	4	26,540	964·5	6,635	3·6	241·1	7,710	3·5	271·8	6	5,475	3·8	209·3	8
"	F	14	84,000	2,958·8	6,000	3·3	211·3	7,930	3·6	285·5	9	4,690	3·3	165·8	3
"	G	4	26,322	932·8	6,580	3·5	233·2	8,380	3·8	323·3	Aged	5,430	3·7	203·7	Aged
"	H	1	6,712	218·8	.....	.....	.....	6,712	3·2	218·8	8	.....	.....	.....	.....
"	I	2	12,480	457·9	6,240	3·6	228·9	6,690	3·5	240·3	11	5,790	3·5	217·6	7
"	J	2	13,040	439·8	6,520	3·3	219·9	6,690	3·1	209·1	7	6,350	3·6	230·7	.....
"	K	6	46,557	1,645·7	7,759	3·5	274·2	8,860	3·3	293·6	5	6,945	3·8	264·5	3
"	L	2	11,035	381·0	5,517	3·4	190·5	5,830	3·4	199·9	9	5,205	3·4	181·1	12
"	N	1	3,360	141·8	.....	.....	.....	3,360	4·2	141·8	3	.....	.....	.....	.....
"	O	2	10,975	377·1	5,487	3·4	188·5	5,530	3·5	197·5	5	5,445	3·1	179·6	6
"	P	3	17,685	672·5	5,895	3·8	224·1	7,025	3·7	263·4	8	4,660	3·5	163·7	2
"	Q	4	30,355	1,021·7	7,488	3·4	255·4	9,170	3·4	315·2	8	6,265	3·2	221·9	5
"	R	6	51,499	1,614·6	8,583	3·1	269·1	10,025	3·1	319·5	6	7,300	3·1	233·4	2
"	S	7	41,500	1,465·2	5,928	3·5	209·2	7,280	3·3	246·0	6	4,838	3·8	183·7	4
"	T	4	17,595	631·4	4,398	3·5	156·3	5,195	3·5	185·5	.....	3,385	3·6	122·6	.....
"	U	8	39,214	1,327·7	4,901	3·3	165·9	5,541	2·7	153·4	6	3,960	3·5	138·8	3
"	V	2	11,280	440·7	5,640	3·7	220·3	5,925	3·6	215·7	4	5,355	4·2	225·0	10
"	W	7	39,785	1,422·0	5,683	3·5	203·1	7,195	3·7	269·6	7	4,461	3·6	162·8	7
Bertie	A	1	4,499	176·6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
"	B	1	4,440	145·6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
"	C	7	28,338	1,065·6	4,048	3·7	152·2	5,445	3·9	203·2	8	3,068	3·6	114·9	5
"	D	1	6,250	240·7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
"	E	4	15,064	525·2	3,766	3·4	131·3	4,240	3·2	136·8	4	3,170	3·9	125·8	3
"	F	1	5,420	203·5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
"	G	3	15,665	637·2	5,221	4·0	212·4	5,985	3·8	232·0	8	5,170	4·3	227·0	.....
"	H	1	5,985	232·0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
"	I	2	8,231	295·8	4,115	3·5	147·9	4,932	3·9	182·9	10	3,299	3·4	112·9	2
Black Creek	B	1	7,265	217·1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
"	C	3	22,589	758·5	7,529	3·7	279·1	8,060	3·5	284·0	7	6,680	3·5	239·1	4
"	D	1	7,410	253·9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
"	E	5	23,594	844·7	4,718	3·5	168·9	5,455	4·1	224·2	6	3,404	3·5	120·7	2
"	F	7	42,170	1,449·5	6,024	3·4	207·0	8,210	3·0	252·5	8	4,339	3·0	131·8	2

Bright	A	3	19,250	762·4	6,416	3·9	254·1	7,800	3·9	311·7	7	4,860	3·9	190·8	4
"	B	13	89,295	3,062·9	6,868	3·4	235·6	9,120	3·5	324·9	5	4,880	3·5	171·7	2
"	C	5	37,304	1,310·4	7,460	3·3	262·0	11,034	3·6	397·2	9	3,994	3·5	141·1	4
Bobcaygeon	A	6	21,490	794·6	3,581	3·6	132 4	4,365	3·2	143·7	6	2,295	3·6	89·6	3
"	B	5	20,895	684·5	4,179	3·2	136·9	4,925	3·0	150·6	10	3,305	3.2	105·6	12
Brooksdale	A	6	33,410	1,245·3	5,568	3·7	207·5	6,055	3·6	217·9	11	4,220	3·6	155·9	4
"	B	5	20,276	773·5	4,055	3·5	154·7	6,786	3·8	257·8	5	2,650	4·2	98·5	2
"	C	2	9,460	321·7	4,730	3·3	160·5	4,945	3·4	167·8	5	4,515	3·8	153·9	5
Camlachie	A	6	26,012	902·4	4,335	3·4	150·4	4,940	3·3	163·5	3	3,795	3·5	133·7	4
"	B	11	50,486	1,825·6	4,589	3·6	165·9	5,318	3·5	189·3	5	4,060	3·3	137·2	4
"	C	3	15,965	537·8	5,321	3·3	179·2	6,065	3·5	213·6	5	4,770	3·1	149·2	15
"	D	5	24,717	888·3	4,943	3·5	177·6	7,551	3·3	255·7	7	2,551	3·3	84·5	2
"	E	5	27,518	935·2	5,503	3·4	187·0	6,715	3·2	219·9	10	4,770	3·3	161·5	9
"	F	4	13,824	475·6	3,455	3·4	118·9	4,590	3·4	160·6	6	1,945	3·4	67·6	10
"	G	5	20,191	695·5	4,038	3·4	139·1	4,925	3·5	176·9	7	2,810	3·3	93·3	3
"	H	5	30,155	1,188·2	6,031	3·9	237·6	7,590	4·1	314·5	7	4,860	3·5	170·6	3
Cassel	A	8	33,295	1,210·6	4,161	3·6	151·3	5,320	3·5	186·7	7	2,665	3·6	98·2	3
"	B	2	10,915	444·9	5,257	4·2	222·4	5,755	4·3	250·5	5	5,160	3·7	194·4	5
"	C	1	4,445	161·6	4,445	3·6	161·6	4,445	3·6	161·6	4	.....	.....	.....	.....
"	D	17	69,598	2,508·1	4,094	3·1	147·5	5,290	3·6	194·8	7	2,336	3·5	82·3	8
"	E	6	29,823	1,182·5	4,971	3·9	197·0	7,105	3·5	255·0	5	3,280	3·2	107·1	12
"	F	8	30,110	1,139·4	3,514	4·0	142·4	5,395	3·8	204·8	11	2,095	3·5	74·5	2
Central Smith	A	14	124,025	4,003·6	8,843	3·2	285·9	11,560	3·4	396·6	10	6,680	3·2	217·7	3
"	B	2	5,622	211·4	2,811	3·7	105·2	3,441	3·7	128·6	7	2,181	3·7	82·8	8
Culloden	A	10	49,820	1,697·2	4,982	3·4	169·7	6,325	3·4	218.7	6	2,630	3·2	86·1	8
Dalmeny	A	17	88,642	3,303·2	5,214	3·6	192·3	7,614	3·8	296·2	8	3,455	3·9	136·3	2
"	B	17	107,547	3,943·1	6,326	3·6	231·9	8,950	3·3	296·1	.....	4,270	3·4	145·5	2
"	C	6	29,576	1,073·9	4,929	3·6	178·9	6,942	3·1	221·0	7	3,754	3·9	148·4	3
East and West Oxford	A	2	17,670	604·0	8,835	3·4	302·0	9,220	3·3	312·0	8	8,450	3·4	292·0	9
"	B	5	27,994	1,292·6	5,598	4·6	258 5	6,540	5·2	344.1	8	4,740	5·1	242·2	6
Elma	A	8	37,451	1,373·9	4,681	3·6	171·7	5,725	3·5	200·1	8	4,135	3·6	152·5	6
"	B	12	47,437	1,639 4	3,953	3·4	136 6	5,685	3·2	196·2	8	1,998	3·2	64·2	2
"	C	9	49,564	1,726·0	5,507	3·4	191·7	6,998	3·4	238·1	11	4,260	3·8	163·8	3
"	D	8	27,791	1,017·1	3,598	3·5	127·2	4,296	3·4	150·0	12	2,926	3·9	114·3	.....
"	E	12	69,138	2,502·1	5,761	3·6	208·5	7,500	3·2	245·6	9	3,638	3·8	139·0	2
"	F	11	56,361	2,082·0	5,123	3·6	189·2	6,425	3·8	246·4	8	3,095	3·5	109·4	3
"	G	11	38,484	1,425·7	3,498	3·7	129·6	4,154	3·5	147·4	10	2,628	3·7	98·2	4
"	H	9	41,512	1,527·9	4,612	3·7	169·6	6,080	3·5	213·8	.....	3,820	4·2	161·2	4
"	I	10	53,246	1,844·5	5,324	3·4	184·4	7,030	3·1	222·8	8	4,620	3·5	163·8	4
Gamebridge	A	10	47,720	1,513·4	4,772	3·1	151·3	5,647	2·8	159·9	6	3,950	3·1	123·5	4
"	B	6	32,838	1,103·7	5,473	3·3	183·9	6,420	3·3	212·6	9	4,435	3·3	147·4	7·6
Hickson	A	14	78,670	2,907·1	5,619	3·7	207·6	7,259	3·6	264·2	9	3,596	3·6	131·1	4
"	B	9	37,600	1,383·4	4,177	3·6	153·7	5,740	4·3	252·5	8	2,915	3·2	95·0	4
"	C	1	5,640	204·2	5,640	3·4	204·2	5,640	3·4	204·2	10	.....	.....	.....	.....
"	D	5	32,703	1,104·8	6,540	3·3	220·9	7,345	3·4	252·1	4	5,210	3·4	182·2	4
"	E	3	13,785	495·5	4,595	3·5	165·1	6,185	3·3	207·8	10	3,575	3·7	135·8	2

Comparisons between Herds in the Province of Ontario for the Full Period of Lactation, 1909.—*Continued.*

Name of Association.	Herd	No. of Cows.	Total Yield of Herd.		Average Yield per Cow.			Yield of Best Cow.				Yield of Poorest Cow.			
			Milk.	Fat.	Milk.	Test.	Fat.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.
			Lbs.	Lbs.	Lbs.		Lbs.	Lbs.		Lbs.		Lbs.		Lbs.	
Innerkip	A	1	4,960	214·1	4,960	4·3	214·1	4,960	4·3	214·1	5	.....	.....	.....	.....
"	B	3	9,550	348·3	3,183	3·6	116·1	4,100	3·4	142·9	4	2,325	3·6	84·3	2
"	C	1	5,395	219·4	5,395	4·0	219·4	5,395	4·0	219·4	8	.....	.....	.....	.....
"	D	12	60,528	2,248·7	5,044	3·6	187·3	7,840	3·2	255·2	9	2,720	3·2	89·3	2
"	E	8	61,305	2,055·9	7,663	3·3	256·9	9,285	3·0	286·2	5	5,020	3·3	168·3	8
"	F	8	59,056	1,966·3	7,362	3·3	245·7	9,025	3·4	311·8	7	5,425	3·3	179·2	3
"	G	8	36,659	1,305·9	4,582	3·5	163·2	6,390	2·9	189·9	5	3,829	3·3	125·0	2
"	H	4	43,461	1,386·8	10,865	3·1	346·7	12,733	3·2	414·8	8	9,708	3·2	311·4	8
Keene	A	7	51,177	1,578·8	7,311	3·0	225·5	8,509	2·9	252·0	7	6,415	2·7	177·1	7
"	B	9	54,817	1,807·1	6,090	3·2	200·7	8,055	3·4	279·6	10	4,755	3·4	165·5	5
Kerwood	A	7	26,832	967·1	3,873	3·5	138·1	4,595	3·3	152·4	8	3,270	3·3	109·3	3
"	B	4	19,091	701·9	4,772	3·6	175·4	5,580	3·3	185·4	3	4,250	3·6	155·6	7
Lorneville	A	4	23,085	747·4	5,771	3·2	186·8	9,430	2·9	272·4	7	3,870	2·8	116·0	10
Milton	A	7	44,485	1,514·1	6,355	3·4	216·3	8,940	3·3	299·5	5	4,400	3·5	156·8	3
Morewood	A	8	20,536	734·9	6,845	3·5	244·9	7,710	3·3	258·4	6	5,825	3·7	216·1	7
"	B	15	93,160	3,427·9	6,210	3·6	228·5	7,370	3·4	262·3	5	5,210	3·6	191·4	4
McDonald	A	15	63,843	2,216·4	4,256	3·4	147·7	5,460	3·1	185·4	5	2,890	3·4	98·8	3
"	B	9	33,070	1,184·8	3,674	3·5	131·6	4,595	3·4	159·4	8	3,160	3·5	109·8	4
"	C	20	65,733	2,579·1	3,286	3·9	128·9	4,280	3·8	166·9	7	1,855	4·3	79·3	3
"	D	11	43,362	1,576·2	3,942	3·6	143·2	4,890	3·7	182·6	9	2,615	4·0	154·7	3
Pine Grove	A	7	31,189	1,047·3	4,455	3·3	149·6	6,500	3·6	237·3	6	2,662	3·3	90·1	3
"	B	6	36,030	1,330·2	6,005	3·8	221·7	6,760	3·3	223·7	4	4,978	4·1	208·4	13
Prescott	A	26	140,891	5,019·8	5,419	3·5	193·0	7,600	3·2	243·9	4	2,942	3·4	100·0	2
"	B	6	33,583	1,113·4	5,597	3·3	185·5	6,605	3·5	235·4	9	3,765	3·1	118·3	2
Rockford	A	13	75,218	2,639·6	5,784	3·5	203·0	7,840	3·3	262·2	6	2,330	3·2	142·0	2
"	B	4	23,129	731·1	5,782	3·1	182·7	6,315	2·9	188·3	7	5,336	2·8	153·3	6
"	C	7	42,128	1,355·7	6,018	3·2	193·6	7,670	3·4	267·9	6	4,020	3·4	136·7	2
"	D	10	59,747	2,111·4	5,974	3·5	211·1	8,400	3·2	274·8	10	3,948	3·4	137·7	2
"	E	12	75,757	2,583·4	6,313	3·4	215.2	7,700	3·0	231·6	11	3,900	5·0	196·7	2
"	F	13	86,099	2,626·6	6,623	3·0	202·0	9,780	2·7	269·7	6	4,290	3·2	140·4	2
"	G	21	178,665	6,215·6	8,507	3·4	295·9	10,975	3·2	353·2	7	6,125	3·6	221·8	12
"	H	10	66,924	2,221·2	6,692	3·3	222·1	9,570	3·1	305·5	5	4,840	3·2	156·0	3
"	I	11	77,474	2,523·2	7,044	3·2	228·4	8,515	3·4	289·4	11	5,579	3·3	186·2	8
"	J	6	40,579	1,281·8	6,763	3·1	213·6	8,998	3·0	276·1	10	4,753	3·3	157·2	4
Sheffield	A	5	24,770	1,004·8	4,954	4·0	200·9	5,300	4·2	222·7	7	4,540	3·8	176·5	8
"	B	5	26,790	974·9	5,358	3·6	194·9	6,790	3·6	248·1	6	4,570	3·8	176·7	5
"	C	4	20,280	732·9	5,070	3·6	183·2	5,690	4·1	237·2	7	4,450	3·3	147·7	3
"	D	3	16,392	547·4	5,464	3·3	182·4	5,750	3·1	183·6	4	5,262	3·5	187·3	4

Shearer	A	9	59,231	2,001·1	6,531	3·3	222·3	8,240	3·0	254·2	5	3,887	3·3	130·9	2
"	B	8	43,435	1,457·2	5,429	3·3	182·1	6,750	3·4	232·6	5	3,795	3·6	137·3	3
"	C	11	55,610	1,890·0	5,055	3·4	171·8	6,575	3·3	220·8	8	4,125	3·6	249·7	11
Spring Creek	A	10	69,492	2,300·3	6,949	3·3	230·0	9,180	2·8	259·7	9	5,310	3·1	167·1	2
"	B	8	54,284	2,032·9	6,785	3·7	254·1	8,010	3·7	302·6	6	4,562	3·8	173·8	5
"	C	8	59,345	1,971·8	7,418	3·3	246·3	9,950	2·9	298·0	4	4,930	3·7	185·4	7
"	D	3	22,610	902·1	7,533	3·8	300·7	8,570	3·5	306·1	6	6,720	4·7	319·1	7
"	E	4	22,650	824·1	5,662	3·6	206·0	6,920	3·2	223·1	7	5,040	3·3	169·6	7
"	F	3	16,760	626·3	5,586	3·7	208·7	7,680	3·9	304·7	5	4,510	3·7	167·9	2
"	G	11	56,996	1,885·8	5,187	3·3	171·4	7,850	3·2	251·9	9	3,930	2·8	107·5	8
"	H	6	32,964	1,152·2	5,494	3·4	192·0	8,415	3·6	303·2	7	2,930	3·2	94·2	3
"	I	8	39,473	1,366·7	4,934	3·4	170·8	6,360	3·5	228·0	4	4,085	3·6	147·8	12
"	J	6	29,523	996·2	4,920	3·3	166·0	6,056	3·5	212·0	9	2,810	2·9	83·9	2
South Lanark	A	8	38,540	1,433 6	4,817	3·7	179·7	6,410	3·4	223·4	6	2,765	4·1	113·7	3
"	B	18	106,928	3,973·0	5,934	3·7	220·6	8,054	3·5	283·9	7	4,140	4·1	172·2	3
"	C	18	110,152	3,346·5	6,119	3·2	197·0	7,250	3·2	231·6	9	4,591	3.1	143·7	7
"	D	2	12,695	380·4	6,347	3·0	190·2	8,030	2·9	240·5	7	4,665	3·0	139·9	4
"	E	12	49,320	1,657·6	4,110	3·3	138·1	5,360	3·0	160·9	4	2,840	3·5	99·7	3
"	F	7	29,310	970 3	4,187	3·3	138·6	4,710	3·2	153·8	6	3,800	3·4	130·6	5
"	G	9	33,921	1,236·3	3,768	3·6	137·3	4,575	3·5	164·0	7	2,884	3·7	108 2	3
"	H	10	43,485	1,519·7	4,348	3·5	151·3	5,640	3·3	186·0	6	2,935	3·4	100·3	2
"	I	13	43,163	1,606·4	3,220	3·7	123·5	4,100	3·9	163·3	6	2,605	3·5	92·4	3
Star	A	1	6,810	208·8	6,810	3·0	208·8	.....	.....	.....	.....	.....	.....	.....	.....
"	B	2	12,400	388·1	6,200	3·1	194·0	6,490	3·2	210·9	8	5,910	2·9	177·2	7
"	C	9	45,470	1,616·6	5,052	3·5	178·5	6,125	3·5	218·1	12	3,665	3·3	123·8	2
Frowbridge	A	6	21,055	782·6	3,509	3·4	130·4	4,420	3·5	157·0	10	2,215	3·8	84·7	6
"	B	4	17,696	817·7	4,424	4·6	204·4	5,278	4·6	244·2	7	3,740	4·9	186·5	7
Wallace	A	7	23,420	825 6	3,340	3·5	117·9	4,004	3·3	132·1	9	2,570	3·8	98·0	3
"	B	3	16,341	473·3	5,447	2·8	157·7	5,443	2·9	161·8	3	4,888	3·2	156·5	7
"	C	4	20,307	640·7	5,076	2·1	160·1	5,945	3·1	188·3	7	4,175	3·9	164·1	3
Warsaw	A	8	39,060	1,376·8	4,882	3·5	172·1	6,170	3·5	220·8	11	3,960	3·7	147.7	3
"	B	20	133,645	4,260·8	6,632	3·2	213·0	7,865	3·1	246·6	6	4,930	3·1	157·2	.....

Table No. 1 is a summary of all Ontario cows recorded in our books for their full period of lactation in 1909. In many cases the herds include more cows than the number given in the third column, but records were not completed.

In looking over the figures here tabulated many contrasts may be noted. In the Avonbank association the 6 cows in herd R gave 4,942 pounds of milk more than the 6 in herd K. The 6 cows in Bobcaygeon herd A gave 11,920 pounds of milk less than the 6 in Brooksdale herd A, and actually *30,000 pounds of milk less* than the aforementioned 6 in Avonbank herd R. The 7 cows in herd F, Black Creek, gave 13,832 pounds of milk *more* than the 7 cows in herd C Bertie.

The two herds in Central Smith show a remarkable difference in the average yield; one is more than three times greater than the other.

In the Camlachie association the 4 herds of 5 cows each give total yields varying from twenty to thirty thousand pounds of milk.

The two herds in Dalmeny, of 17 cows each, show a difference in yield of 18,905 pounds of milk. There is almost that much difference in the yields of herds F and G in the Elma association, only 11 cows each; and over twenty thousand pounds difference between the 12-cow herds B and E.

Three herds in the Innerkip association, of 8 cows each, show another series of high step-like ascents, and the 12 cows in herd D give a little less than the 8 in herd E.

Between the 15 cows in Morewood herd B and McDonald herd A, there is almost 30,000 pounds of a difference in the total yield.

The herd of 9 cows in Star association gives almost 12,000 pounds of milk more than the 9 in the South Lanark herd G.

Innerkip herd H has an average yield of 10,865 pounds of milk from 4 cows, the poorest giving 9,708 pounds. This is in strong contrast to the average yield per cow of 2,811 pounds in Central Smith, and the 3,122 pounds as an average of 14 cows in Keene.

Herd B, Warsaw, has a noteworthy average of 6,632 pounds of milk for 20 cows.

Good individual yields of over 10,000 pounds of milk are included, and several of over 8,000 and 9,000 pounds.

In the column giving the yield of the poorest cow it will be noted that although many 2 and 3 year olds are included, there are cows aged 8 and 10 and 12 years that are responsible for very low yields. If 5,000 pounds of milk be taken as a minimum standard of production for a profitable cow, it would appear from this column that there is room for considerable weeding out. On the other hand, there is every evidence of a good deal of weeding having been done, as there are cows appearing in this column credited with over 6,000 and 8,000 pounds of milk, considerably more than the best cows in some herds.

Only one herd has an average test of less than 3·0 per cent of fat, and that is for only 3 cows. On the other hand, 76 herds tested 3·5 per cent and over.

A standard of at least 250 pounds of butter fat per cow is none too high for any herd in these days. Unfortunately far too many cows in this table are found below that, not only in the average yield of the herd and the yield of the poorest cow, but also in the column giving the yield of the best cow.

In Central Smith is found a good average of 285·9 pounds of fat from 14 cows, and in Rockford 21 cows are credited with an average of 295·9 pounds of fat. Such examples might well be copied to a far larger extent, which would quickly result in the elimination of some of the 8-year-old cows giving *less than 83 pounds of fat* during their full period of lactation. Can such cows be worth keeping?

If we take the yield of the best cow in each of 157 herds, we find that the average is 6,124 pounds of milk and 209 pounds of fat. As compared with this, the average yield of the poorest cows in the same herds is only 3,706 pounds of milk and 131 pounds of fat, or an average difference of 2,418 pounds of milk and 78 pounds of fat between the best cow and the poorest cow in these herds. This shows very clearly the necessity for improvement so as to bring the production of all the cows to a uniformly high level.

In Bright herd C the difference between the yields of the best and the poorest cow is 7,040 pounds of milk and 256 pounds of fat.

In table XIX. the average yield of Ontario cows is given as 5,481 pounds of milk and 191·6 pounds of fat. That there is room for considerable general improvement is evidenced by the fact that 74 herds in this table (No. 1) fall below that in the average yield per cow. In one association not one herd is up to it.

TABLE II.—Comparisons between Herds in the Province of Ontario for the Full Period of Lactation, 1909—(Milk only.)

NAME OF ASSOCIATION.	Herd.	No. of Cows.	TOTAL YIELD OF HERD.	AVERAGE YIELD PER COW.	BEST COW.		POOREST COW.	
			Milk.	Milk.	Yield of Milk.	Age.	Yield of Milk.	Age.
			Lbs.	Lbs.	Lbs.		Lbs.	
Black Creek	A	3	17,074	5,691	6,066	3	5,088	5
Belmont	A	5	28,397	5,679	6,327	7	4,526	4
Culloden	A	70	469,560	6,708	10,340	10	3,680	2
Mapleton	A	10	79,106	7,910	9,320	6	5,420	2
"	B	10	70,538	7,053	8,918	7	4,892	2
"	C	7	36,365	5,195	7,608	8	3,393	3
"	D	8	55,402	6,925	9,190	9	5,713	7
North Oxford	A	1	6,860	6,860	6,860	3	.....	.....
"	B	14	68,002	4,857	8,805	9	2,738	2
"	C	9	46,185	5,131	6,639	4	3,521	2
"	D	5	38,219	7,643	8,170	5	7,280	5
Oak Leaf	A	10	54,660	5,466	6,940	....	3,720	.....
"	B	13	69,660	5,358	6,205	.....	4,450	.....
"	C	16	67,782	4,236	5,971	.....	2,979	.....

If the 16 cows in herd C, Oak Leaf, were as good as those in herd A, Mapleton, instead of 67,782 pounds of milk they would give 126,560 pounds, *nearly double*. The record of the Culloden herd is a brilliant example of what is being done by a real dairy farmer, not simply a keeper of cows. For such a large herd the average is exceptionally high.

TABLE III.—Comparisons between Herds in the Province of Ontario for Twelve Months Production, 1909.

NAME OF ASSOCIATION.	Herd.	No. of Cows.	TOTAL YIELD OF HERD.		AVERAGE YIELD OF HERD.			YIELD OF BEST COW.				YIELD OF POOREST COW.			
			Milk.	Fat.	Milk.	Test.	Fat.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.
			Lbs.	Lbs.	Lbs.		Lbs.	Lbs.		Lbs.		Lbs.		Lbs.	
Avonbank	A	6	40,885	1,574·6	6,814	3·8	262·4	8,170	3·8	318 7	3	5,750	4 3	252·2	8
"	B	1	5,915	220·0	.....	.....	.....	5,915	3·7	220·5	5	.....	.....	.....	.....
"	C	1	9,485	322·3	.....	.....	.....	9,485	3·3	322·3	13	.....	.....	.....	.....
"	D	1	9,080	311·3	.....	.....	.....	9,080	3·4	411·3	3	.....	.....	.....	.....
"	E	1	5,200	194·5	.....	.....	.....	5,200	3·7	194·5	4	.....	.....	.....	.....
"	F	1	6,925	264 3	.....	.....	.....	6,925	3·8	264·3	11	.....	.....	.....	.....
Black Creek	A	2	15,216	518·3	7,608	3·4	259·1	8,036	3·1	256·9	5	7,180	3·6	261·4	4
"	C	3	28,064	370·2	9,354	3·4	323·4	13,764	3·3	464·2	10	6,520	4·0	263·7	2
"	D	7	50,297	1,681·2	7,185	3·3	240·1	8,796	3·1	283·2	10	4,411	3·4	152·2	10
"	E	7	61,276	1,961·6	8,753	3·2	280·6	11,410	3·2	372·2	7	7,670	3·2	255·7	6
"	F	3	19,526	900·8	6,508	4·6	300·2	8,280	3·4	282·9	6	5,526	5·5	304·4	5
Bright	A	3	18,536	805·8	6,178	4·3	268·6	7,221	3·0	268·6	7	5,540	4·6	258·5	.....
East and West Oxford	A	7	62,644	2,164·5	8,947	3·4	309.1	12,115	3·1	377·6	7	7,145	3·7	269·7	6
Innerkip	A	10	72,282	2,379·4	7,228	3·2	327·9	9,421	3·3	326·4	6	4,365	3·8	169·9	3
"	B	8	76,855	2,529·7	9,606	3·2	316·2	12,972	2·9	380·2	6	7,570	3·3	253·8	6
Kerwood	A	8	33,520	1,309 9	4,190	3·9	163·7	5,830	3·3	194·2	7	3,180	3·7	119·9	10
Pine Grove	A	2	15,065	498·9	7,531	3·3	249·4	8,150	2·9	243·5	8	6,915	3·6	255·4	2
"	B	1	5,372	273·8	.....	.....	.....	5,372	5·0	273·8	2	.....	.....	.....	.....
Shearer	A	1	9,075	257·6	.....	.....	.....	9,075	2·8	257·6	8	.....	.....	.....	.....
"	B	1	8,950	320·0	.....	.....	.....	8,950	3·6	320·0	12	.....	.....	.....	.....
Spring Creek	A	2	16,640	566·7	8,320	3·4	283·3	9,390	3·3	316·5	3	7,250	3·4	250·2	6
"	B	6	45,052	1,617·7	7,675	3·5	269·6	8,560	2·6	316·7	7	6,545	3·5	234·6	5
"	C	2	17,940	528·8	8,970	2·9	264·4	11,010	3·1	322·4	6	6,930	2·9	206·4	3
"	D	2	22,100	782·6	11,050	3·5	391·3	13,810	2 8	389·8	8	8,290	4·7	392·8	11
Black Creek	B	8	44,264	.....	5,533	.....	.....	6,611	.....	.....	10	4,284	.....	.....	3
North Oxford	A	1	5,100	.....	5,100	.....	.....	5.100	.....	.....	15	.....	.....	.....	.....

NOTE the 6 individual yields of upwards of 11,000 lbs. of milk, one yield *more than 4 times as much* as the 10-year-old cow at Kerwood.

TABLE IV.—Comparisons between Individual Herds in the Province of Ontario for Full Period of Lactation, 1909.

HERD.	No. of Cows.	TOTAL YIELD OF HERD.	AVERAGE YIELD PER COW.	BEST COW.		POOREST COW.	
		Milk.	Milk.	Yield of Milk.	Age.	Yield of Milk.	Age.
		Lbs.	Lbs.	Lbs.		Lbs.	
A	4	26,591	6,647	8,927	6	5,089	3
B	18	114,107	6,339	7,893	5	4,564	11
C	3	12,075	4,018	5,811	8	3,068	6
D	1	4,271	4,271	4,271	2	.....	.....
E	2	13,867	6,933	7,133	5	6,736	3
G	10	52,705	5,270	6,543	5	3,234	4
H	19	86,024	4,527	5,723	.....	2,937	.....

Herd B with 18 cows exceeds the total yield of herd H with 1 cow more by 28,083 pounds of milk.

TABLE V.—Comparisons between Individual Herds in the Province of Ontario for Twelve Months' Production, 1909.

HERD.	No. of Cows.	TOTAL YIELD OF HERD.	AVERAGE YIELD PER COW.	BEST COW.		POOREST COW.	
		Milk.	Milk.	Yield of Milk.	Age.	Yield of Milk.	Age.
		Lbs.	Lbs.	Lbs.		Lbs.	
F	1	8,872	8,872	8,872	8	.....	.....
I	7	53,915	7,702	8,168	5	7,193	3
J	5	32,960	6,592	6,565	.....	4,390	.....

TABLE VI.—Comparisons between Herds in the Province of Quebec for the Full Period of Lactation, 1909.

NAME OF ASSOCIATION.	Herd.	No. of Cows.	TOTAL YIELD OF HERD.		AVERAGE YIELD PER COW.			YIELD OF BEST COW.				YIELD OF POOREST COW.			
			Milk.	Fat.	Milk.	Test.	Fat.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.
			Lbs.	Lbs.	Lbs.		Lbs.	Lbs.		Lbs.		Lbs.	Lbs.	Lbs.	
Clarenceville	A	4	17,728	635·1	4,432	3·5	158·8	4,756	3·6	170·1	10	3,872	3·4	132·0	6
"	B	5	22,809	828·8	4,561	3·6	165·7	5,824	3·4	199·1	4	3,800	3·5	135.1	3
"	C	12	49,630	1,833·2	4,136	3·7	152·8	5,600	3·2	182·4	7	2,390	3·8	88·8	12
Coaticook	A	9	38,094	1,547·5	4,232	4·0	171·9	5,430	4·0	222·2	8	3,071	4·1	128·4	12
Compton	A	13	65,357	2,559·5	5,027	3·9	196·9	8,041	4·3	346·1	7	3,364	4·4	149·5	3
"	B	11	40,495	1,538·6	3,681	3·8	139·9	5,210	3·8	199 7	6	2.864	3·8	107·2	11
Cowansville	A	16	104,231	5,090·8	6,514	4·8	318·1	10,423	4·3	455·2	7	4,143	5·2	218·0	2
"	B	17	102,430	3,930·5	6,025	3·8	231·2	8,495	3·7	317·7	11	4,020	3 6	157·5	2
"	C	18	115,311	4,736 6	6,406	4·1	263·1	9,050	3·8	344·7	5	4,764	4·0	190·8	10
Dairy Valley	A	11	58,301	1,982·6	5,300	3·4	180·2	8,290	4·0	336·5	5	3,490	3·2	113 8	9
"	B	6	16,801	679·1	2,800	4·0	113·2	3,736	4·3	162·3	8	2,100	3·8	80·2	11
"	C	8	25,160	914·3	3,145	3·6	114·2	4,540	3·5	161·5	11	2.216	3·7	82·9	4
Dixville	A	11	45,427	2,885·6	4,129	4·4	262·3	5,567	4·5	253·4	9	2.810	4·8	135·4	3
"	B	10	31,217	1,269·8	3,121	4·0	126·9	4,050	3·6	159·1	13	2,082	3·4	72·2	7
"	C	12	50,983	2,085·9	4,248	3·8	165·5	5,575	3·7	210·4	7	2,630	3·7	98·0	2
Foster	A	15	61,348	2,794·6	4,090	4·5	186·3	5,444	4·4	245·0	7	2,510	4·6	117·9	2
"	B	13	48,847	2,080·1	3,757	4·2	160·0	5,030	3·9	199·7	14	2,235	4·2	94·6	3
"	C	16	42,932	1,745·4	2,683	4·0	109·0	3,415	4·2	145·0	7	2,121	3·9	84·4	8
"	D	12	40,282	1,419·1	3,356	3·5	118·2	4,430	3·4	150·3	7	1,798	3·6	65·2	2
Henryville	A	11	33,891	1,330·3	3,081	3·9	120·9	3,330	3·9	132·3	9	1,730	4·0	109·3	3
Les Ecureuils	A	20	96,610	3,704·0	4,830	3·8	185·2	5,950	4·0	241·3	5	4,150	3·6	150·2	5
Marbleton	A	11	55,196	2,104·2	5,017	3·8	191·2	6,840	3·6	250·3	14	3,239	3·5	113·2	2
"	B	8	29,608	1,048·0	3,701	3·5	131·0	5,404	2·9	159·6	.....	2,946	3·6	108·7	4
"	C	7	32,839	1,234·5	4,691	3·7	176·3	5,848	3·9	228·5	8	3,905	3·7	144·2	11
"	D	9	32,297	1,243 1	3,588	3·8	138·1	4,155	4·5	190·7	7	2,855	3·8	108·9	.....
North Hatley	A	5	25,807	1,048·3	5,179	3·9	209·6	6,540	4·3	279·0	6	4,345	3·9	173·1	6
"	B	11	44,540	1,624·6	4,049	3·6	147·6	6,260	3·5	239·2	10	3,120	3·4	108·7	9
"	C	7	33,546	1,393·6	4,792	4·1	199·0	6,291	4·2	268·8	10	3,270	4·2	138·8	11
Notre Dame de Stanbridge	A	10	38,710	1,480·0	3,871	3·8	148 0	5,280	3·5	184·4	5	2,760	5·0	138·9	3
" "	B	7	27,755	980·1	3,965	3·5	140·0	4,950	3·1	153·5	7	2,270	3·5	79·8	7
Ormstown	A	5	20,553	765·3	4,110	3·7	153·0	4,775	3·8	181·7	7	3,635	2·7	136·9	9
"	B	11	79,048	2,672·4	7,186	3·3	242·9	9,579	3·2	318·3	8	5,092	3·4	174·4	4
"	C	9	55,643	2,300·9	6,182	4·1	255·6	7,675	4·7	363·1	.....	4,370	4·2	183·8	.....
"	D	16	73,131	2,957·1	4,570	4·0	184·8	6,026	4·2	257 6	7	3,502	3·7	130 6	.....
"	E	12	71,520	2,893·5	5,960	4·0	241·1	7,470	4·1	310·7	7	4,230	4·0	173·2	.....
"	F	17	100,794	4,031·9	5,929	4·0	237·1	8,950	4·8	431·0	11	2.272	4·0	91·5	2
"	G	24	176,761	6,967·0	7,365	3·9	290·0	9,880	3·9	393·9	11	4,260	3·9	169·3	6

Richmond	A	10	39,189	1,585·8	3,918	4·0	158·5	5,440	3·7	203·0	8	2,085	4·3	89.5	3
"	B	20	89,741	2,378·7	4,487	3.7	168·9	6,212	3·7	234·4	8	2,847	3·8	107·3	5
"	C	19	111,072	4,101·6	5,845	3·7	216·0	7,370	3·6	270·0	10	3,520	4·0	143·7	8
"	D	11	50,502	1,718.4	4,591	3·3	155·3	5,610	3·3	186·5	6	3,630	3·6	133·6	11
St. Armand	A	14	54,476	2,529·8	3,891	4·6	180·6	6,800	4·4	299·3	6	2,515	4·7	119·7	10
"	B	5	28,037	1,155·3	5,605	4·1	231·0	6,490	4·2	276·5	9	2,865	4·9	141·2	2
"	C	21	99,923	3,960·5	4,948	3·8	188·5	5,945	3·7	223·2	4	3,475	3·7	124·6	12
"	D	31	154,385	5.913·3	4,980	3·8	190·7	7,200	3·6	265·7	12	3,110	4·1	128·4	3
"	E	15	91,137	3,573·7	6,095	3·9	238·2	9,805	4·1	405·0	11	4,740	3·9	187·3	2
"	F	5	17,474	737·0	3,494	4·2	147·2	3,883	4·3	170·1	9	3,055	4·5	138·3	11
"	G	2	8,991	358·6	4,495	3·9	179·3	5,080	4·1	212·2	6	3,911	3·7	146·4	9
"	H	2	13,014	536·4	6,507	4·0	268·2	7,566	4·0	309·1	7	5,448	4·1	227·3	3
"	I	6	20,285	802·1	3,380	3·9	133·6	4,110	3·8	161·1	.....	2,585	4·5	117·6	....
St. Clet	A	6	28,371	1,011·1	4,728	3·5	168·5	5,550	3·4	188·7	10	3,333	3·3	112·0	3
"	B	3	17,098	661·5	5,696	3·8	220·5	6,183	4·0	251·2	3	4,765	3·6	174·6	2
"	C	4	21,250	832·9	5,312	3·8	208·2	6,140	4·0	246·7	10	4,360	3·8	167·1	3
St. Edouard	A	8	41,846	1,539·2	5,230	3·1	167·2	6,691	3·1	208·9	8	3,760	3·1	127·0	3
St. Edwidge	A	14	77,366	2,733·6	5,525	3·5	195·2	6,540	3·3	218·9	13	3,964	3·5	141·2	10
"	B	8	37,618	1,327·6	4,702	3·5	165·9	5,092	3·4	177·0	.....	4,290	3·3	143·5	.....
Ste. Emelie	A	3	11,576	514·2	3,858	4·4	171·4	4,071	4·1	169·0	11	3,635	4.7	174·0	6
"	B	6	21,823	895·2	3,637	4·1	149·2	3,929	4·0	158·1	6	3,370	4·0	137·1	9
"	C	8	30,800	1,332·7	3,850	4·3	166·5	4,570	4·2	192·3	8	2,505	4·3	109·9	2
"	D	6	31,160	1,301·9	5,193	4·1	216·9	5,830	4·3	254·1	11	4,356	4·2	184·9	4
"	E	6	23,360	971·0	3,893	4·1	161·8	4,240	4·2	178·5	6	3,450	4·1	141·9	4
"	F	5	17,844	794·1	3,568	4·4	158·8	4,550	4·8	222·6	.....	2,280	4·6	106·7	.....
St. Prosper	A	18	124,524	5.239·7	6,862	4·2	291·0	10,710	4·0	430·1	10	5,143	4·0	210·2	3
"	B	2	9,072	373·5	4,536	4·1	186·7	4,639	4·1	190·5	12	4,433	4·1	183·0	11
"	C	5	27,785	1,166·6	5,557	4·2	233·3	6,221	4·1	256·1	14	4,404	4·1	183·6	3
"	D	8	50,101	1,928·4	6,262	3·8	241·0	7,265	3·7	272·5	5	5,225	3·8	200·6	4
"	E	6	25,874	1,037·2	4,312	4·0	172·8	4,935	3·9	193·2	10	3,825	4·1	156·9	8
"	F	5	23,262	964·5	4,652	4·1	192·9	4,890	4·2	208·0	16	4,415	4·1	183·2	12
Verchères	A	11	49,642	2,011·2	4,512	4·0	182·8	5,830	4·0	235·0	9	3,402	4·4	147·3	8
Rigaud	A	11	59,720	...	5,429	...	...	...	...	...	...	...	...	...	...
"	B	9	46,479	.....	5,164	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
"	C	8	39,039	.....	4,879	.....	....	.....	.....	.....	.....	.....	.....	.. ....	.....
St. Judes	A	5	22,650	.....	4,520	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

In table VI the associations at Henryville, Compton, Dixville and Dairy Valley have herds of eleven cows whose total yield of milk is 33,891, 40,495, 45,427 and 58,301 pounds respectively. It seems remarkable to find such a difference, actually 24,410 pounds of milk, between the total yields of two herds of the same number of cows.

At Foster and Dairy Valley are found two very low average yields for herds, under 3,000 pounds of milk, while at Ormstown there is an average yield of 7,365 pounds of milk for twenty-four cows.

There are several good individual yields of 8,000, 9,000 and 10,000 pounds of milk, and in the column giving the yields of the best cow in each herd are found mature animals of eleven, twelve, fourteen and sixteen years of age.

Two or three of the lowest yields of milk, under 3,000 pounds, are from eleven and twelve-year olds.

A prominent feature of this table is the number of cows giving upwards of 200 pounds of butter fat, showing that satisfactory and profitable yields are being obtained. These should stimulate men in other parishes.

The best cow in herd A, Cowansville, gives more than *six times as much* butter fat as the 7-year old poorest cow in herd B, Dixville.

In many herds are found good cows giving twice as much butter fat as poor cows in the same herd. In herd A, Dairy Valley, the 9-year old cow gives *only one-third* as much fat as the 5-year old.

The eleven cows in herd B, Ormstown, give 5,917 pounds of milk more than the sixteen in herd D.

In Dairy Valley, herd A averages 5,300 pounds of milk against 2,800 for herd B, equivalent to $25 per cow per year more income.

The total yield of herd E, St. Armand, is 31,673 pounds of milk greater than the yield from the fifteen cows in herds F, G, H and I.

In several herds are to be found differences of 4,000 and 5,000 pounds of milk, while in herd A, Cowansville, and herd F, Ormstown, there is over 6,000 pounds difference between the highest and lowest yields of milk.

The average yield of the best cow in each of the sixty-nine herds is 6,050 pounds of milk, 3·9 test and 239·3 pounds of fat while that of the poorest cow in each of the same herds is 3,448 pounds of milk, 3·9 test and 137·3 pounds of fat, thus indicating a difference of 2,602 pounds of milk and 102 pounds of fat. This is typical of the difference in probably almost all of our dairy herds to-day, and illustrative of the great need of this plan of arriving at a knowledge of individual yields rather than totals or averages. These wide gaps need closing up. Selection of the good cows, on the record of their total production, will speedily result in the establishment of herds showing not only a higher, but a more uniformly good yield.

TABLE VII.—Comparisons between Individual Herds in the Province of Quebec for the Full Period of Lactation, 1909.

Herd.	No. of Cows.	Total Yield of Herd.	Average Yield Cow.	Best Cow.		Poorest Cow.	
		Milk.	Milk.	Yield of Milk.	Age.	Yield of Milk.	Age.
		Lbs.	Lbs.	Lbs.		Lbs.	
A	8	36,619	4,577	5,240	6	3,770	2
B	3	23,823	7,941	8,568	10	7,292	11
For Period of Twelve Months Production, 1909.							
B	3	24,736	8,245	9,865	10	6,489	6

TABLE VIII.—Comparisons between Herds in the Province of British Columbia for the Full Period of Lactation, 1909.

NAME OF ASSOCIATION.	Herd.	No. of Cows.	TOTAL YIELD OF HERD		AVERAGE YIELD PER COW.			YIELD OF BEST COW.				YIELD OF POOREST COW.			
			Milk.	Fat.	Milk.	Test.	Fat.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.
			Lbs.	Lbs.	Lbs.		Lbs.	Lbs.		Lbs.		Lbs.		Lbs.	
Cowichan	A	2	7,971	296·7	3,985	3·6	143·3	5,663	3·2	192·5	11	2,308	4·5	104·2	2
"	B	4	18,353	648·1	4,588	3·5	162·0	5,452	3·3	184·5	6	4,092	3·9	161·5	4
"	C	1	3,897	133·2	3,897	3·4	133·2	3,897	3·4	133·2	9	.....	.....	.....	.....
"	D	1	5,105	245·7	5,105	4·7	245·7	5,165	4·7	245·7	2	.....	.....	.....	.....
"	E	2	12,525	544·4	6,262	4·3	272·2	7,525	4·4	335·7	11	5,000	4·1	208·7	.....
"	F	2	12,724	555·8	6,362	4·3	277·9	6,650	4·2	285·2	5	6,074	4·4	270·6	7
"	G	6	31,605	1,383·2	5,267	4·3	230·5	5,920	4·3	257·3	12	4,630	4·3	200·0	4
"	H	1	7,852	361·3	7,852	4·6	361·3	7,852	4·6	361·3	5	.....	.....	.....	.....
"	I	2	5,740	205·0	2,870	3·5	102·5	3,620	3·6	130·6	.....	2,120	3·5	74·4	.....
"	J	2	10,670	416·6	5,335	3·9	208·3	5,435	3·9	211·7	2	5,235	3·9	204·9	2
"	K	4	19,195	794·1	4,798	4·1	198·5	5,575	4·2	235·4	7	3,580	4·3	156·9	2
"	L	2	5,470	308·8	2,735	5 6	154·4	3,050	4·7	146·0	2	2,420	6·7	162·8	3
"	M	3	15,975	683·3	5,325	4·2	227·7	6,965	3·8	265·1	7	3,605	4·5	165·1	3
"	N	3	9,720	443·2	3,240	4·5	147·7	3,535	5·0	179·0	2	2,915	3·9	114·8	2
"	O	2	8,394	373·7	4,197	4·4	186·8	4,295	4·1	176·6	2	4,099	4·8	197·1	8
"	P	1	4,675	237·4	4,675	5·0	237·4	4,675	5·0	237·4	11	.....	.....	.....	.....
"	Q	4	11,677	438·5	2,919	3·8	109·6	3,385	3·6	124·6	6	2,152	4·4	95·1	6
"	R	5	19,095	846·7	3,819	4·4	169·3	4,615	4·2	195·8	4	2,750	4·8	132·1	2
"	S	2	11,685	433.6	5,842	3·7	216·8	6,990	3·5	246·1	9	4,695	3·9	187·5	4
"	T	3	15,601	553·2	5,200	3·5	184·4	6,502	3·3	218·2	6	4,481	3·9	175·2	6
"	U	2	9,825	417·4	4,912	4·2	208·7	5,305	4·1	217·8	5	4,520	4·4	199·6	6
Comox	A	5	28,945	1,176·2	5,789	4·0	233·2	6,295	4·1	262·2	4	5,110	3·6	184·8	5
"	B	3	10,700	409·9	3,566	3·8	136·6	4,270	3·4	148·3	10	3,060	3·9	122·2	6
"	C	1	5,027	299·6	5,027	5·9	299·6	5,027	5·9	299·6	2	.....	.....	.....	.....
"	D	8	38,139	1,616·8	4,767	4·2	202·1	5,980	3·7	222·2	9	3,367	4·8	161·5	2
"	E	7	25,520	1,140·6	3,645	4·4	162·9	5,020	4·5	229·1	4	2,550	5·6	143·7	6
"	F	9	24,803	990·3	2,997	3·7	110·0	3,665	3·5	128·2	8	1,915	4·9	94·2	2
"	G	1	5,777	243·6	5,777	4·2	243·6	5,777	4 2	243·6	8	.....	.....	.....	.....
Chilliwack	A	11	44,172	1,571·9	4,015	3·5	142·9	5,202	3·2	171·3	5	3,095	3·4	108·6	2
"	B	4	34,840	1,093·0	8,710	3·1	274·2	9,500	2·9	283·0	7	7,760	3·1	245·7	5
Eden Bank	A	3	22,410	807·0	7,470	3·6	269·0	8,130	3·6	244·6	7	6,600	3·8	254·5	7
"	B	3	19,094	723·6	6,364	3·8	241·2	7,614	3·9	298·9	5	5,390	4·1	218·5	2
"	C	5	32,930	1,148·8	6,586	3·4	229·7	7,540	3·0	232·0	8	5,550	3·5	204·4	3
"	D	6	39,586	1,389·4	6,597	3·5	231·5	8,380	3·1	262·3	10	5,090	3·8	198·4	.....
"	E	1	6,624	294·2	6,624	4·4	294·2	6,624	4·4	294·2	8	.....	.....	.....	.....
"	F	5	25,830	1,113·3	5,166	4·3	222·6	7,120	4·3	311·5	.....	3,250	3 2	104·5	3
"	G	5	33,463	1,177·9	6,692	3·5	235·5	7,565	3·1	238·5	6	5,080	3·7	188·7	4
Islands	A	1	5,475	304·4	5,475	5·5	304·4	5,475	5·5	304·4	6	.....	.....	.....	.....
"	B	1	5,090	226·1	5,090	4·4	226·1	5,090	4·4	226·1	2	.....	.....	.....	.....
Nanaimo	A	2	9,025	440·6	4,512	4·8	220·3	4,650	5·1	239·1	3	4,375	4·6	201·5	2
"	B	1	5,510	272·2	5,510	4·9	272·2	5,510	4·9	272·2	4	.....	.....	.....	.....
"	C	6	32,950	1,499·8	5,491	4·5	249·9	6,730	4·2	285·5	10	4,040	4·4	178·9	3
"	D	2	13,330	565·8	6,665	2·2	282·9	6,810	4·1	291·3	3	6,520	4·2	274·5	.....

In table VIII, the highest yield of milk, 9,500 pounds, is found in herd B, Chilliwack. In the same column is a yield of only 3,050 pounds of milk, in herd L, Cowichan. There are promising yields of over 5,000 pounds of milk from heifers, also in the same column.

The yield of butter fat from the best cow runs from 124·6 pounds from a 6-year old cow in herd Q, Cowichan, up to 361·3 pounds from a 5-year old in herd H, Cowichan.

Herd F, Comox, has an average yield of 2,997 pounds of milk, but herd A has an average of 5,789 pounds *more* per cow.

In the column giving the yields of the poorest cows the variation is from 74·4 pounds of fat up to 274·5 pounds of fat, *almost four times as much.* In the same column are some heifers yielding over 300 pounds of fat.

TABLE IX.—Comparisons between Herds in the Province of British Columbia for Twelve Months Production, 1909.

Name of Association.	Herd.	No. of Cows.	Total Yield of Herd.		Average Yield per Cow.			Yield of Best Cow.				Yield of Poorest Cow.			
			Milk.	Fat.	Milk.	Test.	Fat.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.
			Lbs.	Lbs.	Lbs.		Lbs.	Lbs.		Lbs.		Lbs.		Lbs.	
Cowichan	A	11	49,632	2,234·5	4,512	4·9	203·1	8,410	1·5	293·6	12	2,605	4·9	126·9	2
"	B	5	28,704	1,074·9	5,740	3·7	214·9	8,518	3·3	281·8	5	3,954	3·8	153·6	12
"	C	12	51,004	2,031·5	4,250	3·9	169·2	6,196	3·5	222·4	8	2,052	5·5	114·6	3
"	D	12	51,596	2,052·4	4,298	3·9	171·0	5,643	3·1	185·0	3	3,288	4·7	154·2	5
"	E	4	12,587	446·9	3,146	3·5	111·7	3,764	3·5	135·3	11	2,349	3·7	88·5	2
"	F	3	20,385	899.1	6,794	4·4	299·7	7,495	4·0	303·8	5	5,790	4·7	270·7	15
"	G	7	52,992	2,366·7	7,570	4·4	338·1	9,415	3·8	358·6	6	4,700	5·4	253·9	4
"	H	9	57,960	2,653·6	6,440	4·5	293·7	9,020	3·7	338·6	5	4,330	5·1	224·3	3
"	I	4	29,868	1,412·1	7,467	4·7	353·0	9,020	4·5	408·7	5	5,170	6·9	361·6	7
"	J	5	22,605	1,047·3	4,521	4·6	209·5	5,740	4·6	266·0	.....	3,225	4·7	154·6	7
"	K	4	19,852	704·6	4,963	3·5	176·1	5,820	3·5	205·1	.....	4,280	3·7	161·4	.....
"	L	3	16,707	714·1	5,569	4·2	234·7	5,675	4·2	238·8	11	5,514	4·4	244·8	3
"	M	3	18,375	911·1	6,125	4·9	303·7	7,165	5·1	369·7	4	5,340	4·9	262·2	5
"	N	6	29,561	1,516·8	4,926	5·1	252·8	5,896	4·5	268·6	4	4,050	4·9	203·1	14
"	O	3	22,882	918·0	7,627	4·0	306·0	8,855	4·3	381·7	8	6,680	3·8	256·9	6
"	P	8	46,510	2,160·8	5,813	4·6	270·1	8,195	4·1	342·7	6	4,375	4·7	197·4	3
"	Q	4	20,468	953·3	5,117	4·6	238·3	6,955	4·4	309·1	8	3,920	4·9	195·3	14
"	R	2	11,538	581·7	5,764	5·0	290·8	6,261	4·5	282·7	9	5,277	5·6	299·0	4
"	S	4	23,255	910·4	5,663	4·0	227·6	6,795	3·7	252·7	3	4,495	3·9	175·5	2
"	T	7	52,216	2,244·7	7,459	4·3	320·6	8,918	4·2	378·7	5	6,060	5·3	326·8	6
"	U	1	4,005	171·5	4,005	4·2	171·5	4,005	4·2	171·5	2	.....	.....	.....	.....
"	V	1	10,560	407·4	10,560	3·1	407·4	10,560	3·1	407·4	7	.....	.....	.....	.....
"	W	3	21,620	883·4	7,206	4·0	294·4	9,630	3·9	381·3	8	5,540	3·6	202·5	8
"	X	9	50,913	2,016·6	5,657	3·7	224·0	6,505	3·4	224·5	10	3,548	5·2	174·7	11
"	Y	2	12,260	568·6	6,130	4·6	284·3	7,020	4·6	329·2	7	5,240	4·5	239·4	8
Comox	A	7	47,919	1,985·8	6,845	4·1	283·6	8,215	4·2	348·7	7	4,760	3·8	184·5	5
"	B	3	16,351	921·3	5,450	5·6	307·1	6,165	5·6	348·1	3	5,008	5·5	275·1	12
"	C	4	11,240	507·6	1,810	4·5	126·9	3,405	3·9	132·8	2	2,240	4·2	94·6	2
Chilliwack	A	8	67,300	2,028·7	8,412	3·0	253·5	10,365	3·0	311·4	3	6,395	2·9	184·8	8
Eden Bank	A	1	5,750	207·1	5,750	3·6	207·1	5,750	3·6	207·1	3	.....	.....	.....	.....
"	B	1	4,715	227·5	4,715	4·8	227·5	4,715	4·8	227·5	7	.....	.....	.....	.....
"	C	3	26,381	939·3	8,793	3·6	313·1	9,885	3·2	317·3	12	7,936	3·8	304·4	10
"	D	6	38,277	1,819·1	6,379	4·7	303 1	7,614	4·5	345·7	3	5,345	4·8	261·5	.....
"	E	15	101,570	4,164·8	6,771	4·1	277·6	9,160	3·4	318·9	5	5,050	4·4	225·2	3
Nanaimo	A	4	22,411	976·4	5,627	4·1	244·1	6,180	4·7	295·2	5	5,115	4·2	219·3	3
"	B	7	41,910	1,997·5	5,987	5·7	285·3	7,640	4·8	366·8	6	4,375	5·5	242·6	3
"	C	4	24,365	1,045·8	6,091	4·2	261·4	7,710	3·7	291·8	7	4,984	4·7	234·4	3
"	D	4	25,222	1,125·3	6,305	4·4	281·3	7,580	3·9	301·1	4	5,512	4·7	261·6	8
Islands	A	4	27,920	1,404·3	6,980	5·0	351·0	8,260	4·8	403·5	3	5,605	4·2	237·5	6

In table IX the yield of the best cow in herd E, Cowichan, is 3,764 pounds of milk and 135·3 pounds of fat, but in several herds the best cow gives over 8,000 and 9,000 pounds of milk. In herd I, is a yield of 408·7 pounds of fat, *more than three times* as much.

Herd A, Comox, has a total yield of 47,919 pounds of milk, or 20,328 pounds more than the 7 cows in herds B and C.

In Eden Bank is found a good average of 6,771 pounds of milk and 277·6 pounds of fat from a herd of 15 cows.

One of the best averages is found in herd A, Chilliwack, where 8 cows are credited with 8,412 pounds of milk, which average is materially helped by the 3-year old giving 10,365 pounds of milk.

A three-year-old in herd A, Islands, has one of the best yields of fat, 403·5 pounds.

TABLE X.—Comparisons between Herds in the Province of Nova Scotia for the Full Period of Lactation, 1909.

NAME OF ASSOCIATION.	Herd.	Number of Cows.	TOTAL YIELD OF HERD.		AVERAGE YIELD PER COW.			YIELD OF BEST COW.				YIELD OF POOREST COW.			
			Milk.	Fat.	Milk.	Test.	Fat.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.
			Lbs.	Lbs.	Lbs.		Lbs.	Lbs.		Lbs.		Lbs.		Lbs.	
Brookfield.....	A	2	9,395	350·4	4,697	3·7	175·2	4,990	3·4	170·9	6	4,405	4·0	179·5	7
"	B	5	15,960	553·3	3,192	3·4	110·6	4,170	3·4	141·9	8	2,350	3·1	72·9	12
"	C	3	11,695	477·4	3,898	4·0	159·1	4,285	3·7	160·8	4	3,620	3·8	138·9	4
"	D	1	3,130	118·6	3,130	3·7	118·6	3,130	3·7	118·6	7	.....	.....	.....	.....
Scotsburn.....	A	3	14,999	739·7	4,999	4·9	246·5	5,937	4·8	290·3	3	3,969	4·6	192·5	11
"	B	4	18,221	850·5	4,355	4·6	212·6	5,685	4·3	248·4	6	3,061	4·6	143·2	2
"	C	2	10,632	406·9	5,016	4·0	203·4	5,103	4·0	208·9	7	4,929	4·0	198·0	7
"	D	3	13,691	608·3	4,563	4·4	202·7	5,147	4·5	232·1	6	4,211	4·5	191·4	4

Probably herd B, Brookfield, could afford to replace the 12-year-old giving only 72·9 pounds of fat.

The average yields per cow at Scotsburn are all over 200 pounds of fat and better results still are confidently expected there.

TABLE XI.—Comparisons between Herds in the Province of Prince Edward Island for the Full Period of Lactation, 1909.

NAME OF ASSOCIATION.	Herd.	Number of Cows.	TOTAL YIELD OF HERD.		AVERAGE YIELD PER COW.			YIELD OF BEST COW.				YIELD OF POOREST COW.			
			Milk.	Fat.	Milk.	Test.	Fat.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.
			Lbs.	Lbs.	Lbs.		Lbs.	Lbs.		Lbs.		Lbs.		Lbs.	
Cornwall	A	7	29,292	1,112·1	4,184	3·7	158·8	5,720	3·8	221·8	9	2,810	4·0	114·7	3
Crapaud	A	2	7,697	285·0	3,848	3·7	142·5	4,440	3·4	156·1	4	3,257	3·9	128·9	3
"	B	9	40,720	1,518·8	4,524	3·7	168·7	5,755	3·3	191·6	9	3,185	4·0	128·1	3
"	C	6	22,086	826·7	3,681	3·7	137·7	4,310	3·7	163·7	4	3,110	3·4	107·1	3
Hampton and Tryon	A	4	19,750	804·0	4,937	4·0	201·0	5,150	3·4	175·7	5	4,475	3·7	166·4	3
" "	B	2	11,980	464·0	5,990	3·9	232·0	6,240	3·7	235·1	7	5,740	3·9	228 9	10
Marshfield	A	1	5,150	217·7	5,150	4·2	217·7	5,150	4·2	217·7	5	.....	.....	.....	.....
"	B	3	10,065	387·6	3,355	3·8	129·2	4,060	3·5	146·5	5	2,860	4·0	115·8	.....
"	C	8	44,956	1,647·4	5,619	3·6	205·9	6,740	3·5	237·0	6	4,050	3·8	157·1	3
"	D	3	14,791	610·0	4,930	4·1	203·3	6,858	3·8	260·4	.....	4,310	4·3	188·8	.....
"	E	3	12,135	456·3	4,044	3·7	152·1	4,365	3·7	163·5	6	3,575	3·9	139·7	9
New Glasgow	A	4	22,025	808·8	5,506	3·6	202·2	6,470	3·4	223·6	7	3,940	3·9	155·5	4
"	B	1	5,587	209·7	5,587	3·7	209·7	5,587	3·7	209·7	9	.....	.....	.....	.....
"	C	2	11,054	421·6	5,527	3·8	210·8	6,375	3·9	249·5	6	4,679	3·6	172·1	7
"	D	3	13,415	497·9	4,471	3·7	165·9	4,995	3·6	183·3	6	4,010	3·7	152·4	5
"	E	6	25,310	959·0	4,218	3·8	159·8	5,190	3·9	210·0	4	2,800	3·6	102·0	2
New Perth	A	8	35,647	1,314·9	4,455	3·6	164·3	5,004	3·6	184·9	6	3,444	3·9	133·5	9

In the column for average yield per cow are found with only two exceptions, yields of over 4,000 pounds of milk in all the herds tabulated. Many of the yields of the best cows are over 6,000 pounds of milk. The dairy cow can evidently be handled to good advantage in this province.

TABLE XII.—Comparisons between Herds in the Province of Prince Edward Island for Twelve Months Production, 1909.

NAME OF ASSOCIATION.	Herd.	No. of Cows.	TOTAL YIELD OF HERD.		AVERAGE YIELD PER COW.			YIELD OF BEST COW.				YIELD OF POOREST COW.			
			Milk.	Fat.	Milk.	Test.	Fat.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.
			Lbs.	Lbs.	Lbs.		Lbs.	Lbs.		Lbs.		Lbs.		Lbs.	
New Glasgow	A	1	6,725	249·0	6,725	3·7	249·0	6,725	3·7	249·0	10				
"	B	1	6,690	234·0	6,690	3·1	234·0	6,690	3·1	234·0	3				
Marshfield	B	1	5,235	156·8	5,235	2·9	156·8	5,235	2·9	156·8	7				
"	C	1	8,285	372·9	8,285	4·5	372·9	8,285	4 5	372·9					

Viewing the records given above in tables X, XI and XII, it is seen that the old time definition of a dairy cow as one that would give a hundred weight of butter in a year is not applicable nowadays.

In New Brunswick and Prince Edward Island are found cows in the column for yields of poorest cows that are giving over 200 pounds of fat, and in those tabulated for Nova Scotia are cows that almost touch that level.

The four herds at Scotsburn, N.S., show a fairly good average test and yield of fat per cow, and far better results are confidently looked for in this section.

Herd C at Marshfield, P.E.I., has a good total yield, considerably ahead of herd A, New Perth, and herd B, Crapand, which has one cow more.

In herd A, Cornwall, the best yield of milk is more than twice as much as the poorest, while in herd A, Hampton and Tryon, there is only 675 pounds of milk and 9 pounds of fat difference between the best and poorest cows.

TABLE XIII.—Comparisons between Herds in the Province of New Brunswick for the Full Period of Lactation, 1909.

NAME OF ASSOCIATION.	Herd.	No. of Cows.	TOTAL YIELD OF HERD.		AVERAGE YIELD PER COW.			YIELD OF BEST COW.				YIELD OF POOREST COW.			
			Milk.	Fat.	Milk.	Test.	Fat.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.
			Lbs.	Lbs.	Lbs.		Lbs.	Lbs.		Lbs.		Lbs.		Lbs.	
Berwick	A	3	11,432	469·9	3,810	4·1	156·6	4,430	3·3	148·8	3	3,150	4·2	132·3	5
Blissville	A	3	9,002	350·5	3,000	3·8	116·8	4,096	3·4	139·7	6	2,314	4·1	95·8	3
"	B	3	12,475	480·8	4,158	3·8	160·2	5,129	3·6	187·2	8	3,146	4·2	135·0	4
Carsonville	A	7	33,202	1,289·9	4,743	3·8	184·2	5,595	3·7	207·9	7	3,402	3·8	131·8	3
"	B	7	22,597	1,022·5	3,228	4·4	143·2	3,510	5·2	176·3	6	2,297	4·3	98·8	3
Havelock	A	5	32,518	1,227·6	6,503	3·7	216·7	8,240	3·4	285·8	7	5,476	3·9	219·5	6
Killam's Mills	A	7	20,560	775·6	2,937	3·7	110·8	3,420	4·1	140·6	7	5,340	3·7	87·4	2
Lower Ridge	A	2	7,610	306·9	3,805	4·0	153·4	4,181	4·1	174·3	7	3,429	3·8	132·6	3
Penobsquis	A	7	32,130	1,353·7	4,5·0	4·2	193·3	5,430	3·6	198·9	9	4,050	4·6	187·4	5
"	B	3	9,625	453·1	3,208	4·7	151·0	3,450	4·9	170·3	6	2,780	4·7	132·0	2
"	C	3	14,986	640 0	4,960	4·2	213·3	6,751	4·0	273·2	7	3,772	4·4	169·1	2
"	D	2	9,800	502·7	4,900	5·1	251·3	5,055	5·6	286·0	8	4,745	4·5	216·7	9
"	E	8	30,259	1,474·6	3,782	4·9	184·3	4,922	4·6	223·3	8	2,692	4·9	131·7	3
Petitcodiac	A	4	15,339	595·6	3,834	3·8	148·9	5,155	4·0	207·7	5	2,068	3·9	80·0	2
"	B	9	46,782	1,598·3	5,198	3·3	176·4	6,720	3·4	231·7	5	3,350	3·0	102·9	2
"	C	8	39,948	1,391·9	4,993	3·4	173·9	6,563	3·4	223·3	10	3,898	3·4	133·0	2
"	D	3	10,395	477·7	3,464	4·6	159·2	3,918	4·7	187·6	11	3,085	3·9	122·5	2
"	E	5	23,784	922·6	4,756	3·8	184·5	6,220	4·1	257·4	8	4,094	4·0	165·2	5
"	F	7	39,255	1,422 9	5,607	3·6	203·2	6,833	3·5	243·8	7	4,692	3·5	164·7	9
"	G	7	25,223	1,035·1	3,746	4·2	147·9	4,492	3·4	156·0	10	2,279	4·8	109·7	5
"	H	5	19,909	705·6	3,981	3·5	141·1	4,744	3·4	161·5	8	5,315	3·7	123·9	4
Salisbury	A	5	21,900	771·2	4,380	3·4	154·2	5,470	2·7	152·7	5	3,975	4·0	159·0	6
Sussex	A	9	38,001	1,473·2	4,222	3·8	163·6	5,163	3·5	184·3	.....	3,069	3·8	119·0	.....
"	B	7	37,520	1,359·6	5,360	3·6	194·2	6,030	3·5	215·6	10	3,590	3·8	138·0	7
"	C	1	5,180	213·0	5,180	3·8	213·0	6,180	3·8	213·0	4	.....	.....	.....	.....
Welsford	A	3	14,990	667·5	4,990	4·4	222·5	5,305	4·0	215 7	5	4,730	4·5	217·1	4
"	B	3	13,354	552·9	4,451	4·1	184·3	5,665	3·4	206·8	7	2,884	5·4	156·0	3
"	C	1	5,350	201·9	5,350	3·9	201·9	5,350	3·7	201·9	.....	.....	.....	.....	.....

The average yield of fat per cow is only 110·8 lbs. in the herd at Killam's Mills, herd F, Petitcodiac, is almost double this, and the herd at Havelock is more than double. Eleven cows in the column headed yield of poorest cow give more milk than the best cow at Killam's Mills. The herd at Havelock has the best showing all through for those in the Province of New Brunswick.

In the column for the yield of the best cow are many good yields of over 6,000 pounds of milk, showing what can be done.

TABLE XIV.—Comparisons between Herds in the Province of New Brunswick for Twelve Months' Production, 1909.

NAME OF ASSOCIATION.	Herd.	No. of Cows.	TOTAL YIELD OF HERD.		AVERAGE YIELD PER COW.			YIELD OF BEST COW.				YIELD OF POOREST COW.			
			Milk.	Fat.	Milk.	Test.	Fat.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.
			Lbs.	Lbs.	Lbs.		Lbs.	Lbs.		Lbs.		Lbs.		Lbs.	
Berwick	A	4	21,210	909·6	5,302	4·2	227·4	6,660	3·8	256 1	12	3,970	4·4	177·3	15
Penobsquis	A	1	6,000	233·1	6,000	3·8	233·1	6,000	3·8	233·1	5	.....	.....	.....	.....
"	B	13	54,161	2,686·6	4,166	4·9	206·6	5,224	4·4	221·1	7	3,425	5·3	182·9	3
"	C	9	40,669	2,109·9	4,518	5·2	234·4	5,291	5·2	277·4	3	3,322	4·9	165·3	2
"	D	10	43,355	2,402·1	4,335	5·5	240·2	5,900	5·2	310·5	9	2,726	7 1	193·8	2
Petitcodiac	A	6	27,843	1,049.1	4,640	3·7	174·8	6,753	3·8	259·0	8	2,885	4·3	125·4	2
"	B	2	11,560	385·0	5,780	3·3	192·5	6,760	3·2	223·0	3	4,800	3·3	162·0	4
"	C	1	4,780	168·5	4,780	3·3	168·5	4,780	3·3	168·5	3	.....	.....	.....	.....
Sussex	A	1	5,570	254·2	5,570	4·5	254·2	5,570	4·5	254·2	3	.....	.....	.....	.....
"	B	2	11,880	526·2	5,940	4·4	263·1	6,140	4·8	299·6	7	5,740	3·9	226·6	.....

Individual Herd in the Province of New Brunswick for Twelve Months' Production, 1909.

.....	A	4	29,397	.....	7,344	.....	.....	8,626	.....	.....	6	6,143	.....	.....	7

Individual Herd in the Province of New Brunswick for Full Period of Lactation, 1909.

.....	A	2	11,183	.....	5,591	.....	.....	5,923	.....	.....	3	5,260	.....	.....	3

TABLE XV.—Individual Herd in the Province of Manitoba for Full Period of Lactation, 1909.

NAME OF ASSOCIATION.	Herd.	No. of Cows.	TOTAL YIELD OF HERD.		AVERAGE YIELD PER COW.			YIELD OF BEST COW.				YIELD OF POOREST COW.			
			Milk.	Fat.	Milk.	Test.	Fat.	Milk.	Test.	Fat.	Age.	Milk.	Test.	Fat.	Age.
			Lbs.	Lbs.	Lbs.		Lbs.	Lbs.		Lbs.		Lbs.		Lbs.	
Manitoba	A	5	25,064	1,010·2	5,012	4·0	202·0	6,295	3·9	249.1	5	3,704	3·9	146·0	3

Table XVI.—Average Monthly Yields, 1909.

Month and Province.	Total Number of Cows.	Average Yield.		
		Milk.	Test.	Fat.
		Lbs.		Lbs.
January—				
Ontario	347	550	3·6	19·9
British Columbia	528	539	4·2	22·8
Quebec	292	461	4·3	20·0
New Brunswick	112	458	4·6	21·4
Prince Edward Island	79	408	4·0	16·1
General average yield	1,358	511	4·1	20·9
" milk only	36	587		
February—				
Ontario	383	683	3·5	23·8
Quebec	192	558	4·1	23·0
British Columbia	547	555	4·2	23·3
New Brunswick	129	501	4·4	22·1
Prince Edward Island	65	371	3·9	14·6
General average yield	1,316	578	3·9	22·9
" milk only	61	564		
March—				
Ontario	487	718	3·5	25·7
Quebec	206	646	4·5	28·9
British Columbia	613	559	4·0	22·4
New Brunswick	137	546	4·3	23·7
Prince Edward Island	42	485	3·9	18·5
General average yield	1,485	619	3·9	24·3
" milk only	51	697		
April—				
Ontario	1,111	768	3·4	26.0
Quebec	588	613	3·8	23·8
British Columbia	656	600	3·9	23·5
New Brunswick	268	574	4·1	23·8
Prince Edward Island	47	584	3·4	20·3
General average yield	2,670	670	3·7	24·6
" milk only	223	737		
May—				
Ontario	2,272	812	3·4	27·4
Quebec	1,431	659	3·7	24·5
British Columbia	738	647	4·0	25·8
Nova Scotia	24	591	4.2	25·0
Prince Edward Island	71	608	3·8	22·8
New Brunswick	482	550	3·8	20·9
General average yield	5,018	716	3·6	25·7
" milk only	489	807		
June—				
Ontario	3,009	900	3·3	29·8
Prince Edward Island	201	828	3·7	30·0
Quebec	1,928	699	3·6	25·7
British Columbia	773	644	4·0	25·8
Nova Scotia	99	630	4·1	25·9
New Brunswick	634	633	3·9	24·7
General average yield	6,644	780	3·9	24·6
" milk only	582	896		

TABLE XVI.—Average Monthly Yields, 1909—*Concluded.*

Month and Province.	Total Number of Cows.	Average Yield.		
		Milk.	Test.	Fat.
		Lbs.		Lbs.
July—				
Ontario	3,122	788	3·3	26·1
Prince Edward Island	466	763	3·6	27·6
Quebec	2,158	622	3·8	23·3
British Columbia	642	590	4·0	24·1
Nova Scotia	156	553	4·2	23·4
New Brunswick	594	586	3·8	22·3
General average yield	7,138	696	3·6	24·8
" milk only	605	784		
August—				
Ontario	3,037	704	3·5	24·7
Prince Edward Island	576	616	3·7	22·7
British Columbia	566	538	4·2	22·8
Nova Scotia	138	500	4·3	21·9
Quebec	1,967	502	3·9	19·8
New Brunswick	512	489	4·0	19·7
General average yield	6,796	604	3·7	22·5
" milk only	724	707		
September—				
Prince Edward Island	542	669	3·4	23·0
British Columbia	514	539	4·3	23·0
Ontario	2,757	609	3·7	22·1
New Brunswick	414	443	4·2	18·7
Quebec	1,643	452	4·1	18·6
Nova Scotia	129	437	4·1	18·0
General average yield	6,029	550	3·8	21·0
" milk only	538	620		
October—				
Prince Edward Island	416	554	3·8	21·1
British Columbia	498	516	4·3	22·6
Ontario	2,445	523	3·8	19·8
New Brunswick	338	416	4·3	18·0
Nova Scotia	75	457	4·0	18·0
Quebec	1,374	406	4·2	17·1
General average yield	5,151	486	3·9	19.4
" milk only	629	568		
November—				
British Columbia	478	500	4·4	21·9
Nova Scotia	73	433	4·3	19·0
Prince Edward Island	311	477	3·9	18·6
Ontario	1,489	456	3·9	17·7
New Brunswick	139	366	4·8	17·7
Quebec	676	390	4·2	16·3
General average yield	3,166	446	4·1	18·1
" milk only	541	498		
December—				
Prince Edward Island	92	634	3·8	23·9
British Columbia	457	531	4·3	23·2
New Brunswick	119	430	4·6	19·8
Nova Scotia	74	447	4·4	19·8
Quebec	460	451	4·3	19·0
Ontario	903	459	3·8	17·8
General average yield	2,105	479	4·1	19·7
" milk only	528	461		

These average yields for each month correspond very closely with the averages of 1907 and 1908.

The averages given in the above table for milk only include results sent in by several individual farmers who were not taking samples for testing, but simply recording the weights of milk.

PERCENTAGE OF FAT.

In 1909, the number of cows tested each month in the Dominion varied from 1,316 in February, to 7,138 in July, with a total of 48,876 tests made during the year. The totals of the monthly yields were 30,223,347 pounds of milk and 1,127,898 pounds of fat, thus showing an average of 3·73 per cent of fat.

TABLE XVII.—Average Percentage of Fat, 1909, by Provinces.

Province.	Total Number of Tests.	Total Milk.	Total Fat.	Average Test.
		Lbs.	Lbs.	% fat.
Ontario	21,357	14,861,840	518,555	3·49
Quebec	12,879	7,112,668	277,308	3·89
British Columbia	6,993	3,989,115	165,302	4·14
New Brunswick	3,853	2,021,868	82,107	4·06
Prince Edward Island	2,886	1,762,438	64,739	3·67
Nova Scotia	768	387,175	16,378	4·23

TABLE XVIII—Average Percentage of Fat, 1909, by Months and Provinces.

Month.	Ontario.		Quebec.		New Brunswick.		Prince Edward Island.		Nova Scotia.		British Columbia.		Total.	
	Number of Cows.	Average Test.	Number of Cows.	Average Test.	Number of Cows.	Average Test.	Number of Cows.	Average Test.	Number of Cows.	Average Test.	Number of Cows.	Average Test.	Number of Cows.	Average Test.
January	347	3·6	292	4·3	112	4·6	79	4·0			528	4·2	1,358	4·1
February	382	3·5	192	4·1	129	4·4	65	3·9			547	4·2	1,316	3·9
March	487	3·5	202	4·5	137	4·3	42	3·9			606	4·0	1,485	3·9
April	1,106	3·4	581	3·8	268	4·1	47	3·4			650	3·9	2,670	3·7
May	2,272	3·4	1,430	3·7	465	3·8	71	3·8	24	4·2	728	4·0	5,018	3·6
June	3,009	3·3	1,928	3·6	626	3·9	201	3·7	99	4·1	763	4·0	6,644	3·5
July	3,122	3·3	2,158	3·8	594	3·8	457	3·6	156	4·2	642	4·0	7,138	3·6
August	3,037	3·5	1,955	3·9	512	4·0	563	3·7	138	4·3	566	4·2	6,796	3·7
September	2,757	3·7	1,631	4·1	414	4·2	542	3·4	129	4·1	530	4·3	6,029	3·8
October	2,445	3·8	1,374	4·2	338	4·3	416	3·8	75	4·0	498	4·3	5,151	3·9
November	1,489	3·9	676	4·2	139	4·8	311	3·9	73	4·3	478	4·4	3,166	4·1
December	909	3·8	460	4·3	119	4·6	92	3·8	74	4·4	457	4·3	2,105	4.1

TABLE XIX—Comparative Yield of Cows for Full Period of Lactation 1909, by Provinces.

Province.	Number of Cows.	Average Yield of Milk.	Average per cent Fat.	Average Yield of Fat.
		Lbs.		Lbs.
Ontario	1,080	5,481	3·4	191·6
" milk only	238	5,959		
Quebec	745	4,707	3·9	184·8
" milk only	44	5,189		
British Columbia	144	4,979	4·0	200·1
New Brunswick	137	4,409	3·9	173·2
" milk only	4	7,349		
Nova Scotia	23	4,222	4·2	178·4
Prince Edward Island	72	4,643	3·7	174·1
Manitoba	5	5,012	4·0	202·0
Total cows and average yield	2,206	5,034	3·7	188·5
" " " milk only	286	5,857		

TABLE XX—Comparative Yield, by Provinces, of Cows tested for Twelve Months Production 1909, and still giving Milk.

Province.	Number of Cows.	Average Yield of Milk.	Average per cent Fat.	Average Yield of Fat.
		Lbs.		Lbs.
Ontario	86	7,531	3·5	266·9
" milk only	22	6,600		
Quebec, milk only	3	8,245		
British Columbia	213	5,636	4·3	245·2
New Brunswick	49	4,633	4·7	218·8
" milk only	2	5,591		
Prince Edward Island	4	6,733	3·7	253·1
Total cows and average yield	352	5,972	4·0	244·1
" " " milk only	27	6,793		

SOME DEFINITE GAINS FROM COW TESTING.

Attention is particularly directed to the following records and statements by the owners of the herds, especially the first four. The remarkable increases in the yields of milk and the cash income per cow should stimulate every dairyman in Canada.

Mr. S. A. Freeman, of Culloden, Ont., handling a large herd, has the following record:—

In 1906, seventy cows gave an average yield of 5,149 pounds of milk.
" 1907, seventy " " 5,871 "
" 1908, sixty-five " " 6,211 "
" 1909, seventy " " 6,708 "

The yield in 1909 is all the more noticeable as it includes the production of seven 2-year olds; twenty of the best cows averaged 8,724 pounds of milk.

Thus in four years, there is *an increase of 1,659 pounds of milk, or 32 per cent.*

Mr. Freeman writes: 'The last three years I have culled out from eight to ten cows each year; they have mostly been sold for beef. Some nice black and white ones have been bought by dealers and sold in auction sales for dairy cows. One in particular was below my average; I sold her for $45; she brought at the sale $75. I have sold ten this year; they were mostly 5,000 pound cows, five and six years old—not much prospect of them doing better. They all went for beef without any extra feed. I have seven 2-year old heifers to take their place, have bought five more, lost one cow, have twelve yearlings to replace next year's culls. I can't hope to get any better herd than I have at present, unless I raise calves from my best cows. I can't afford to pay $100 and upwards for cows that are only grades to put in a large herd and run chances of them keeping up to their former yield. I think there is more risk in cows that give very large yields if they are fed to produce the milk. *I hope to reach a standard of 8,000 pounds per cow for seventy cows.* If we have a good year we will give it a close rub. It is a hard job to keep up and increase the standard in a large herd; one cow that headed the herd three years ago lost a quarter last spring, the one that was best two years ago died this spring, another one of my very best lost two hind teats last spring, she gave 18 pounds at a mess from her two teats, am keeping her on this year. I will continue weighing the milk this summer.'

It is evident that it must take very careful management to handle such a large herd so successfully, and it will be noticed that Mr. Freeman is still not satisfied with present attainments, but is aiming still higher; 8,000 pounds of milk from 70 cows as an average yield might well encourage other milk producers.

Another very noteworthy instance shows a good average almost doubled inside 7 years. Mr. W. E. Thomson, of Woodstock, Ont., states that *he has increased the yield of milk from about 5,500 pounds of milk per cow in 1902 to 10,500 pounds in 1909* through using a pure bred sire and selecting the best milkers. He states that the cow testing association records have been a great help to him.

Mr. Thomson writes: 'It has always been my practice to raise my own heifers from my best cows, and then to feed and care for them in such a way as to enable them to do the most at the pail. I have only bought four or five since I started into business and they were pure bred cows. The first year I kept records I sold six to a butcher; these were cows I had bought at farm sales to start with. All cows sold after that were sold as milkers. A cow that will not give seven or eight thousand pounds of milk for me in ten months must go. I hope to have all mature cows give an average of one thousand pounds of milk per month.'

Again near Woodstock, Ont., is to be found a most encouraging average and a splendid increase. The herd of 20 cows belonging to Mr. A. J. Davis has been built up from grade Shorthorns of decidedly beef tendency, and *the yield has been doubled in 6 years* (the average in 1903 was 4,500 pounds of milk per cow, and in 1909 it was 9,144 pounds per cow), by the use of a pure bred dairy sire, selecting the best heifers from year to year, and culling out the poorest cows.

Cows are fed liberally, but cheaply, considering the amount of milk they give.

Mr. Davis believes in keeping heifers milking at least 12 months the first season, as he is more likely to get persistent milkers than if they were dried up at the end of 7 or 8 months. The first cross of heifers gave 6,500 pounds (Holstein sire, Shorthorn cows), just 2,000 pounds more than the mothers, which were matured cows.

Two most important points are that the present excellent dairy herd has been built up from a beef breed, grade Shorthorn cows, and *the yield has been doubled* in 6 years. The variation runs from 7,070 pounds to 12,690 pounds of milk per cow. Mr. Davis hopes within the next year or two to bring them up by at least 1,000 pounds per cow,

and to that end the four poorest cows were sold in January. He has the foundation stock in cows above the average to do even better than this.

Mr. R. J. Smart, Scotsburn, N.S., gives the following statement regarding his herd:—

1905.

Six cows, from June 17 to September 30, gave 276 pounds of fat worth		$58 19
Six cows, from October 1 to December 31, gave 78 pounds of fat worth		17 92
Total	354	$76 11

1908.

Four cows from May 11, to Sept. 30	405 pounds of fat	$ 96 02
Four cows from Oct. 1, to Dec. 31	135 "	35 29
Total	640	$131 31

1909.

Six cows from May 12 to, Sept. 30	620 pounds of fat	$145 37
Six cows from Oct. 1, to Dec. 18	245 "	66 34
Total	865	$211 73

Previous to this past year he did not test regularly, but tested a month or two at a time, occasionally, for a number of years, and thereby got some idea of his cows, and started selling off the poorest ones, but found difficulty in buying good ones, and is only getting them by breeding from his best cows. A pure bred Guernsey sire is now being used for the fourth year.

Previous to 1905, no winter dairying was carried on. This winter the average is between twenty and twenty-five pounds of butter per week.

In addition to the receipts given above enough milk and cream were kept at home for family use all the year, which would mean the yield of at least one cow. The past year two of the herd were 2-year old heifers.

Vetches and oats are grown for early fall feeding, and cured for winter feeding. Winter feed consists of clover hay, a few roots and buckwheat-chop, with a few hundred of cottonseed and beans.

Mr. Smart considers a very important point in summer is to change pasture frequently and not put the cows out in the spring until the grass has a good start; also to leave the cows out at night during the hot weather. A great many keep their cows in at night all summer.

It will be observed that the cash income per cow in this herd is practically *three times as much* as it was four years ago.

Mr. W. J. Curtis, Willetsholme, Ont., in 1907, obtained an average yield of 4,334 pounds of milk and 141 pounds of fat from sixteen cows. His thirteen cows in 1909 averaged 6,267 pounds of milk and 198 pounds of fat; this is an increase of 1,933 pounds of milk and 57 pounds of fat per cow, or *over 40 per cent.*

Mr. Curtis writes:—'I bought four pure bred Holstein cows, and generally sell for beef two or three cows a year. I aim at getting as much milk as possible from feed I raise on the farm.'

Mr. J. K. Moore, Peterborough, Ont., of the Central Smith Association, is steadily increasing the average per cow.

In 1907, 20	cows	gave	6,709	pounds	of milk and	213	pounds of fat.
" 1908, 22	"		8,050	"		266	"
" 1909, 21	"		8,978	"		298	"

The increase is thus seen to be 2,269 pounds of milk per cow, or 33 per cent.

Mr. Moore gives the following interesting details of his methods:—

'I might say, first of all, in regard to our herd of 21 cows that were tested this past season that the returns to the first of January with what they gave in January bring their average up to over 9,000 pounds of milk and 300 pounds of butter fat. Also for the month of June, from 23 in first half and 24 in latter half, we put into the factory over 30,000 pounds of milk or 1,000 pounds a day; and for the whole season just closed our 28 cows, of which 11 were heifers with first and second calves, and bearing in mind that we just received ordinary cheese and butter factory prices, these 28 brought us in $1,800. We sold over $100 worth of calves last spring and kept calves valued at over $100, and we did not value our skim milk, but have had a large amount of it to feed our hogs all winter.

'So summing up, we have $1,800 from the factory, $200 for calves and $200 for cows, and two large calves just sold, and whatever value the skim milk had; which is not bad for a graded herd of Holsteins.

'We have used pure bred sires ever since we started into Holsteins thirteen years ago. We are great believers in ensilage, roots and alfalfa. Our great regret is that we did not start raising alfalfa years ago. We always put in three to four acres each year of a mixture of wheat, peas and oats for summer feeding from the silo. We also feed grain most of the year except during the month of June. The grain ration is principally a mixture of wheat and oats and barley which we grow. We also feed oil cake when our cows are freshening in the spring. But our chief aim is to supply our cows with plenty of succulent food which can be grown on the farm at first cost. We find the great secret of success with dairy cows is to fill them to almost bursting with succulent food and contentment, and milk will follow. We only feed twice a day during the whole time that they are stabled, feeding about 6 a.m., and 5 p.m. They never look for anything between times and we consider this another help in getting milk. Water is in front of them at all times. We aim to clean them thoroughly twice a week or more all winter, and consider it time well spent both in the looks of the cows and in the saving of feed occasioned by it.

'I might say, in reference to what our herd brought in the past season, that four of the heifers did not come in till the latter part of July and August and will be milking until next summer, so that our herd returns should be greater than what is shown.

'In regard to profit from our best cow. She (No. 12) is milking yet and will give 12,000 pounds of milk and 400 pounds of butter fat before she is dry. Her food has cost about $45; so you can estimate profit from that. I think to feed our whole herd would average about $40 all round, and as the ones we tested have averaged 9,000 pounds of milk, I think they all have a good profit to their credit.

'Our yield has been entirely increased by keeping our best cows and raising the heifers from them. We have only purchased one pure bred cow, although we have used pure bred sires for about 14 years. I might say that the way we cull out is this: we take our poorest cows as shown by the scales and test, and the next year raise three or four cows on them, fattening these cows off on the rape and selling to the butcher before they are stabled. In this way, we have disposed of three or four each year, and without selling them to our neighbours. *Our aim is 10,000 pounds of milk and 350 pounds of butter fat with all that we can get beyond that.*'

A very satisfactory increase has been made in the herd of Mr. Wm. Paul, of Peterborough, Ont.

In 1907, 14 cows gave an average yield of 4,359 pounds of milk and 143·3 pounds of fat. In 1908, 12 cows gave 5,218 pounds of milk and 181 pounds of fat, and in 1909

the average yield of 13 cows was 5,845 pounds of milk and 206·8 pounds of fat, thus showing an increase of 1,486 pounds of milk per cow, or 34 per cent; and an increase of 63·5 pounds of fat per cow, or 44 per cent.

Mr. Paul writes:—

'A man is working blindfolded who does not test his individual cows.

'My average yield was increased by keeping the best cows and raising calves from them. I kept a good sire, pure bred Ayrshire.

'After starting to test my cows, I disposed of eight poor cows as beef for the first year, six the next and seven the last. I did not fix any limit of weight, but I knew they were my worst cows. If I had not started the cow testing I would likely have had the most of them yet.

'I feed ensilage and roots, and am now growing alfalfa.

'My standard I hope to arrive at is the highest possible.'

Mr. Christopher Howson, Keene, Ont., writes that the increase in the average yield of his cows is due to selling the worst milkers to the butcher. They were fed about the same in 1909 as in 1908. The increase is from 3,564 pounds of milk to 4,924 pounds per cow, or 38 per cent more.

The herd belonging to Mr. T. E. Jory, Lakefield, Ont., shows an average of 4,961 pounds of milk and 182·2 pounds of fat from 9 cows in 1907; 6,216 pounds of milk and 221 pounds of fat from 8 cows in 1908; and 6,511 pounds of milk and 238·9 pounds of fat from 8 cows in 1909, or an increase of 30 per cent.

Mr. Jory writes:

'I may say that I have increased the average by keeping the best cows and raising the calves from them. I have not purchased any cows, but I would if I could get good ones. They are hard to get, for every farmer wants to keep his best ones. With regard to disposing of my poorest cows, I disposed of one each year. I sold them for beef. By weeding out the poor ones, I hope to increase them to 8,000 pounds of butter if I can, but I cannot expect to do much better at present until I get my silo built and grow alfalfa for them.

'I grow peas and oats mixed; I sow one piece as early as I can in the spring and at intervals of a week or 10 days, so that I can have green feed for them until the corn is ready to use. I try to have green fodder for them continually till winter. In winter I feed fodder corn and roots.

'I feed a mixture of oats, buckwheat and pea chop. I think regular milking, kind treatment and having something appetizing in the manger for them when they come in to the stable to be milked, and keeping dogs away from them, have a great deal to do towards filling the milk pail.'

Mr. David Taylor, Warsaw, Ont., shows an increase of 25 per cent in the yield of his herd.

In 1907, 22 cows averaged 5,331 pounds of milk and 172·3 pounds of fat.
In 1908, 25 cows averaged 5,673 pounds of milk and 164·1 pounds of fat.
In 1909, 22 cows averaged 6,680 pounds of milk and 212·3 pounds of fat.

The herd belonging to Mr. E. Hawthorn, Warsaw, Ont., shows an increase of 17 per cent in the yield of fat.

In 1907,	17 cows	averaged	5,581 pounds	of milk and	186·1 pounds of fat
1908,	15 "	"	5,005 "	"	169·2 "
1909,	14 "	"	6,361 "	"	218·6 "

In the herd of Mr. Arthur Edwards, Warsaw, Ont., an increase of 14 per cent in the yield of milk has been obtained since 1907. The yields for the three years are:—

1907,	16 cows	averaged	4,813 pounds	of milk,	173 pounds of fat.
1908,	14 "	"	4,972 "	"	178 "
1909,	15 "	"	5,494 "	"	185 "

Mr. Edwards writes: 'We disposed of 2 cows for beef in 1907, 3 in 1908, and 2 in 1909. We always part with the poorest cows in the herd and the oldest.. We think each cow should reach 5,000 pounds of milk, and would like to see them go to 9,000.'

Mr. W. E. Wood, of Jermyn, Ont., has been able to obtain a substantial increase in the yield of his herd.

In 1907, 13	cows averaged	4,875	pounds of milk and	173·2	pounds of fat.
" 1908, 14	"	5,364	"	187·7	"
" 1909, 10	"	6,830	"	225·8	"

This indicates an increase of 40 per cent in the yield of milk. Mr. Wood writes:—

'I have used a pure bred Holstein sire for four years.

'As to feeding, I feed roots and corn in the fall, no ensilage; I feed roots until they get on grass again, about a peck of pulped roots each day per cow. When my cows come in, from that to about the middle of May, I feed each cow about a gallon of chop mixed. I mix cut straw and roots and chop together and feed hay also in spring.

'My cows have water in front of them in the stable all the time.

'Our average yield was increased by keeping the best cows, as I have been weeding out the poor cows each year since I started testing. I have not bought any cows since I started. I sold out the poor ones for beef, four last year, but I can't say how many each year previous to that, as I don't remember. I would like to be able to get my cows to give 9,000 pounds of milk each.

The herd belonging to Mr. Francis Sheldon, Oak Leaf, Ont., shows an increase of 22 per cent in the yield of milk; 13 cows in 1907 having averaged 4,512 pounds; 9 cows in 1908, 4,992 pounds; and 10 cows in 1909 having given 5,526 pounds, an increase of 1,014 pounds per cow.

Mr. Sheldon writes:—

'In commencing to weigh my milk, I found at once the good cows from the poor ones. I commenced to weed out the poor ones. I never had a silo until last year, but I found it was a good thing.

'I also fed a little more grain, but could not tell the weight. The mixture was oats, corn, buckwheat. I have not kept account of feed, as I raised it all myself.'

Mr. Walter Paterson, of Ingersoll, Ont., writes:—

'I would like to say to all dairymen who do not keep daily dairy records of each individual cow that now is the time to start. It does not take very much time and proves not only to be beneficial, but very interesting, and where hired help has to be depended on largely for milking it seems to stimulate an interest in the work; the cows will be milked cleaner to keep up the average, and one feeder after looking over the milk sheet occasionally can feed the whole herd, each cow being fed in proportion to her yield, say one pound of meal for every six pounds of milk, or more if you wish.

'I always aim to have some peas and oats sown early, or some alfalfa for soiling crop, until the second crop of red clover is ready for pasturing, which does until the corn and mangolds are ready.

'I think turnips make the best winter roots to be fed when the cows are dry.

'I have had no experience with ensilage, but think it is one of the best and probably cheapest feeds for dairy cows at all times of the year.

'I always keep a pure bred sire with my grade Holstein cows. The average yield of my fourteen cows in 1906 was 5,070 pounds, the highest yield for one cow being 6,960 pounds. I have since then been weeding out and last fall discarded all mature cows that would not yield over 6,000 pounds. The highest yield for any one cow in 1909, was 11,354 pounds.'

Mr. J. E. Sandick, Ingersoll, Ont., writes:—

'I will give you our cheese factory returns since 1904. We have kept from 14 to 16 cows and we kept no account of the milk for the house, besides raising from 3 to 6 calves a year, and we fed them well.

In 1904, 14 cows averaged 5,260 pounds of milk, making $39.62 apiece (cheese cheap this year).

In 1905, 15 cows averaged 5,500 pounds of milk, making $56.37.

In 1906, 14 cows averaged 5,097 pounds of milk, making $54.02 (milking six 2-year old heifers).

In 1907, 15 cows averaged 5,803 pounds of milk, making $58.22.

In 1908, 16 cows averaged 6,432 pounds of milk, making $60.06.

In 1909, 16 cows averaged 6,684 pounds of milk, making $66.47.

'I might say that this year (1909) we had several cows aborted and three farrow; so that they did not do their best.

In regard to feeding, previous to 1907 we cured corn in the field and stored it in the barn, then we built a concrete silo 14 x 35, and since we started feeding ensilage, we feed but twice a day; first we milk and then feed 15 pounds of silage. The chop consists of equal parts oats, barley and bran or shorts, giving each cow according to production, from 2 to 4 pounds and from ½ to 1 pound oil cake and 7 or 8 pounds alfalfa hay. Our mangers are fitted with racks so that the hay does not interfere with chop and ensilage. We have the Woodward system of waterworks in, but we want our cows out at least twice a week for an hour if it is not too rough. Then they are given the same at night, and I find they do better than when fed oftener. We have mostly all alfalfa hay this winter, and it certainly is all right. For summer we feed silage and a little chop, according to shortness of pasture, and have green corn and white turnips for late feeding.

'I find that August, September and October are the hardest months to get milk. I am aiming at having half of my cows drying off about that time. We have been gradually working into Holsteins; we keep a pure bred sire, and if we have a cow to put off we have her fat by the time she is dry.'

The herd of Mr. F. W. Goble, Woodstock, Ont., shows a steady increase.

In 1907, 13 cows had an average yield of 5,259 pounds of milk and 192 pounds of fat.

In 1908, 12 cows had an average yield of 6,715 pounds of milk and 246 pounds of fat.

In 1909, 12 cows averaged 7,201 pounds of milk, 253 pounds of fat.

Mr. Goble writes regarding his herd:—

'In the first place, I might say that when our cow testing association started, my herd was in rather bad shape. Before that time we had a fairly good herd of producers, mostly Durham grades; but in breeding them to Durham bulls the offspring in nearly all cases after one or two lactation periods were turned off for beef, as they were unprofitable milkers. Meanwhile the original cows were getting beyond their best, and I bought two Holstein grades and four heifers to replace these older ones. The season of 1907 was over before I bought this new blood. Last season eight of my herd were Holstein grades, of which five were two-year-olds.

'I always use a good pure bred sire for anything that I wish to raise.'

'Last season I fed silage from January to December, and as that was the first whole year that I had fed it, I attribute considerable of my increased yield to that fact. I fed roots from January to April 15. I have had no alfalfa as yet, and grow no summer soiling crops. I would rather depend upon silage for summer feed, as it requires less labour. I fed clover hay, however, throughout the stabling season.

'I do not feed a heavy grain ration; about two pounds of oil cake, one pound of wheat bran and one pound of oat and barley chop for winter feed before they freshen. This is only an average, as few are fed alike. After cows freshen I feed

about three pounds of oil cake, two pounds of wheat bran and four pounds of oat and barley chop.

'It is hard to strike an average price for my milk, as part is sold as cream, part is sent to cheese factory and part is sold as milk for delivery in city. This last summer, on the same day I have received 85 cents or 90 cents per hundred pounds and $1.60. As I did not keep account of milk separated, I have no way of telling just what it averaged me per hundred pounds.

'I might say that I did not increase my average yield by raising calves from my best cows, at least only in one or two cases. My cows were mostly Durham grades, and as I wished to change to Holsteins, I bought two high grade cows and four heifers and raised their calves. The first of these calves is freshening for the first time this spring.

'During 1908, I disposed of one poor cow and six good old cows. During 1909 I disposed of three poor cows and one good old cow. All that were sold were disposed of as fat cattle or canners.

'At first each mature cow that did not produce 5,000 pounds of milk or better had to go. At present they must produce over 6,000 pounds of milk to stay, and then must be high in butter fat.

'My ideal at present is 10,000 pounds of milk per cow.'

Mr. J. C. Fullick, Woodstock, Ont., a member of the Spring Creek association, writes:—

'I bought the most of my herd three years ago and raised the calves they were carrying when I got them, so cannot say exactly what their sire was; I now have a pure bred Holstein bull.

'I built a silo last summer, so have not had any ensilage to feed till this winter.

'I have always fed roots, about 25 pounds a day, when the cows are milking. I have never had any alfalfa, and have never provided a summer soiling crop. While my cows are in the stable from the time they come in till they are turned out to grass I feed from ten to twelve pounds of grain, oats, barley and wheat bran with a little oil cake.

'I cannot give you the profits over and above feed, as I have not kept account long enough and do not care to make any statement that I am not sure of.

'I attribute my success with my herd to feeding regularly and also milking regularly; kind treatment and making them as comfortable as possible; weighing and testing each cow's milk and weeding out the poor ones.

'I shall give more attention to providing more feed, clover hay, ensilage and roots, trying to retain ensilage for summer feeding.

'I sold one cow for beef at the close of 1907, and purchased one in her place, which made fourteen in 1909.

In 1907,	11	cows averaged	5,657	pounds of milk.
" 1908,	11	"	6,780	"
" 1909,	14	"	6,704	"

'These fourteen did not do quite as well as the eleven in 1908, as they included three heifers; still they gave over 1,000 pounds more per cow than the average in 1907.

'I think the increase in milk is due to having them come in early. I think a cow that comes in, say, in January, will give more milk in a season than if she did not come in till April.

'I think no man should sell for a milch cow one that would not give 5,000 pounds. They should go to the butcher, and I think we should not be satisfied till we make every herd reach 8,000 pounds of milk.

'In 1909, my herd average was 6,704 pounds of milk.

'The best cow in the herd gave 8,260 pounds of milk.

'If we take out one or two of the poorest each year, we can easily reach a reasonably high standard for a herd.

Mr. R. A. Harvey, of Mansonville, Que., has achieved an increase of 668 pounds of milk per cow, or a gain of 28 per cent.

In 1906, the yield of	8	cows was	2,337	pounds of milk,	101	pounds of fat.
1907	"	11	"	2,472	"	104	"
1908	"	8	"	3,005	"	132	"

Mr. Harvey writes:—

'One reason for improvement was in five of these cows being heifers that I raised from a pure bred sire, four of them from a Guernsey sire, and I am still continuing with the Guernseys. I have some very promising looking heifers 2 years old that will freshen in 1909. I believe the only way to get a good herd is to test the cows and then select the heifer claves from the best, then test the heifers and select from them. This has been my experience with raising a dairy herd, using nothing but the pure bred sires, getting one that can show good ancestors behind him in the dairy line.

'I have no silo, but raise roots and fodder corn which I feed in the stalk. If I do not have corn when the feed gets dry in summer I feed some grain, bran or shorts mostly, till the corn is matured a little, and then begin to feed corn as long as it lasts, then begin with the roots and some grain with them, bran or shorts. I feed roots immediately after milking at night, and grain in the morning. I could not tell just how much grain I feed to a cow, but I do not feed more than 8 quarts of bran or shorts to a cow daily. When I have roots I feed about half that amount.

'In the spring of 1908 I fed my cows one dollar's worth of grain a day to the whole herd and they paid me back $2.50 a day in butter made at home, besides the skim milk. The hay I did not weigh, so I could not give you the net profit of any of my cows, but I feel well pleased with what they are doing for me.

'I think that farmers might have more pure bred sires by uniting and buying together. One of my neighbours and I bought a bull together, six or seven years ago, and we still own a bull together,. We both have the use of him, each one keeping him part of the time. We do not feel the cost of purchase like one buying alone. We keep a bull three or four years and then change on account of not breeding heifers back to him.'

Mr. G. E. Ford, Cowansville, Que., writes:—

'In 1906 our 8 cows averaged 3,248 pounds of milk and 141 pounds of butter fat, but in 1908 our 10 cows gave an average of 4,410 pounds of milk and 203 pounds of fat, that is to say, they have increased 35 per cent in the yield of milk.

'I always try to get the best pure bred sire possible. My herd are all Jerseys.

'I feed lots of roots, no alfalfa. I have tried it a few times, but failed. Shall try once more and hope for better results. Green peas and oats, also millet and clover. I have no silo, but raise lots of corn; cut corn in winter, pile on barn floor, let it stand a few days, then feed; when all fed out, cut again. Get good results, but believe silo is best and intend to have one soon.

'We feed one pound of grain to every 3 or 4 pounds of milk; our mixture consists of 500 pounds of bran, 300 pounds of corn and barley meal, 200 pounds of ground oats, 100 pounds of cotton seed meal, and a little old process oil cake, all of which is thoroughly mixed together and fed as above stated.

'At present we are getting $1.40 for every $1 spent for feed. We are trying to build up a herd that will average us *400 pounds of butter fat per year.* Our herd is tuberculin tested each year. At present we have some nice young stock coming on.

'We take the following dairy papers: 'Farm and Dairy,' 'Hoard's Dairyman,' 'Jersey Bulletin,' and 'Breeder's Gazette,' and are thinking of taking one or two more good ones, and both my wife and I read them closely through, and not just fold them up and lay away to get dusty. If more of our Canadian farmers would take a little time each day and read up about farming and then try and think a little for themselves, they would soon find it would pay them. Money invested each year in farm papers will pay 50 per cent on the investment if rightly followed out.

'In the year 1905, I bought my first registered Jersey cow. The balance of my herd were native scrubs. In 1906 I bought a registered Jersey bull of A1 breeding, but in 1907, I lost nearly all my herd by tuberculosis, my bull amongst them; so you see I was cleared out—only a few grades and one or two registered cows left. After disposing of my diseased animals and disinfecting my barns, I bought a good registered Jersey bull and six registered cows; two of these cows proved non-breeders.

'From six registered, and twelve grade cows in 1908, I began to try and raise up a good profitable dairy. We keep each year the heifer calves from our best testing and registered cows. Of course we would not dispose of a grade calf if it were from a good cow, but our aim at present is to have all registered cattle, as it costs no more to keep them and they are more profitable when you want to sell for breeding purposes. Of course all this takes time, study in selection, close attention to business. We believe it is far better to raise your own cows than to always buy them. Of course we buy nothing but the best of sires. Our herd is tuberculin tested each year, and I believe it is the only herd in the Townships that is so treated. Most farmers are afraid to have it done; we are not, and our herd is all healthy.'

Mr. Asa Johnston, of Cowansville, Que., has achieved a solid increase.

In 1906, the average yield of 12 cows was 4,503 pounds of milk and 178·1 pounds of fat.

In 1907, the average yield of 16 cows was 5,249 pounds of milk and 224·3 pounds of fat.

In 1908, the average yield of 15 cows was 6,474 pounds of milk and 263·6 pounds of fat.

In 1909, the average yield of 18 cows was 6,459 pounds of milk and 264·2 pounds of fat.

This is an increase of 43 per cent in the yield of milk and 48 per cent in the yield of fat.

The herd of Mr. Hercule Edoin, Pike River, Que., shows a steady increase.

In 1906, the average of 9 cows was 3,674 pounds of milk and 127·6 pounds of fat.

In 1907, the average of 7 cows was 4,877 pounds of milk and 195·7 pounds of fat.

In 1908, the average of 5 cows was 4,609 pounds of milk and 154·7 pounds of fat.

In 1909, the average of 5 cows was 5,695 pounds of milk and 231·0 pounds of fat.

This is an increase of 52 per cent in the yield of milk and 81 per cent in the yield of butter fat.

Mr. Edoin writes:—

'The poor cows were sold for beef. In winter I feed hay and corn. Green feed is a good thing for summer feeding. I fed turnips from November 19 to January 10, from forty to fifty pounds per day. From January 10, I gave them four pounds of meal per day.'

Mr. Theophile Trudel, of St. Prosper, Que., has an average increase of 1,145 pounds of milk in two years, or 21 per cent.

In 1907, the average of 17 cows was 5,364 pounds of milk, 208·8 pounds of fat.

In 1908, the average of 17 cows was 5,480 pounds of milk, 217·2 pounds of fat.

In 1909, the average of 18 cows was 6,509 pounds of milk, 261·0 pounds of fat.

In 1909, the average cost of feed was $36.66.

Mr. Trudel writes:—

'I believe that exposure to a cold rain even in summer means a lowering of the milk yield and an injury from which cows do not recover for four or five days. I have not purchased any cows during these three years, but have selected the best milkers, sending the poorest to the butcher's, the first year 3, the second year 3, and last year 2. Weighing the milk makes one watch the cows far more carefully so that they get better attention in every way.'

Mr. D. G. McKay, of Heathbell, N.S., writes:—

'We have been testing our cows since 1905. In that year we had 8 cows. Our average for the whole herd was 225 pounds of butter.

'In 1909, we also had 8 cows. Our average for that year was 300 pounds, but some of the cows went as high as 350 pounds, and some of them were young—one three years old and another two.

'Our system of feeding is, in winter, to a cow giving about 25 pounds of milk per day, six pounds of meal, two each of barley, oats and bran, half a pound of cotton seed meal. We vary up and down from this according to the quantity of milk that the cow gives. Fifty pounds either turnips or mangels fed one half each end of the day, all the clover hay they will eat and occasionally a feed of oat straw. We water twice a day, have water in the barn and in the yard. On fine days the cows are turned out in the yard for a little while. In July, or as soon as the pastures begin to get short, we feed green clover, then oats, peas and tares, green, then green corn until the turnips are ready to feed.

'We have used nothing but a pure bred Guernsey bull for a number of years.

'You ask if our average yield was increased by keeping the best cows and raising calves from them, or if we purchased cows; we have tried both ways, but have found the former to be much more satisfactory.

'As to how many cows we disposed of each year as poor cows, we could hardly say. We have disposed of quite a number, some of them were fairly good and were sold as milking stock, others were sold for beef, but when we do sell we always try to get rid of the poorest.

'As to what standard a cow must come to, we have not set it. It depends a good deal on circumstances. And what standard do we hope to arrive at? I think that would be hard to set, but we hope to do a good deal better than we have yet done.'

Mr. John W. MacKay, of Scotsburn, N.S., writes:—

'In 1908, we had seven cows, the average yield per cow being 15·5 pounds of butter fat per month during the summer of five months.

'In 1909, we had five cows, the average yield per cow being 25·0 pounds of butter fat per month during the summer season.

'While the pasture is good, we do not feed any grain or mill feed, but whenever the flow of milk begins to decrease, we feed green oats and peas (mixed). We also commence to feed bran and middlings, whenever we think it necessary, in order to keep the cows from going back, gradually increasing the feed until each cow is getting one gallon of bran and one gallon of middlings, with one and a half pints of cotton seed meal per day, fed as a mash twice a day, morning and evening, half this quantity each time. When the cows calve in fall or winter, we also feed an extra gallon of bran per day in two buckets of warm water, half this quantity at a time, keeping this up indefinitely or until the weather gets warm. Thus far we have been feeding all our cows the same quantity. We have no silo, but feed about half a bushel of turnips to each cow per day during winter. We always make use of a pure bred sire, and trust that we shall be able to improve our herd from year to year.'

FEED RECORDS.

The following is a copy of the feed record form supplied by this branch of the department. By this it will be seen that the cost of feed per cow is in each case estimated by the owner.

1 GEORGE V., A. 1911

Department of Agriculture, Ottawa.

Office of the Dairy and Cold Storage Commissioner.

Herd No.....

.....Cow Testing Association.

Feed Record for 30 days ending.....191.....

Name ..... P.O. ..... Province .....

Cow No.	Pasture.	Meal.		Ensilage.		Roots.		Hay.		Other Feed.		Total Value of Feed.
		Lbs. per Day.	Total lbs. Month.	Lbs. per Day.	Total lbs. Month.	Lbs. per Day.	Total lbs. Month.	Lbs. per Day.	Total lbs. Month.	Lbs. per Day.	Total lbs. Month.	
	Days.											$ cts.
1												
2												
3												
4												
5												

What value do you place on:—Pasture per cow per month?.....Meal per ton?..... Roots per ton?..... Hay per ton?..... Other feed?..... Description of hay?..... Other feed?..... What mixture of meal is fed?..... Remarks: .....

Note.—This form is ruled to take records of twenty cows.

The first member to send in a detailed feed record of each cow was one at Kingsmill, Ontario, belonging to the Mapleton cow testing association. Within three months one cow was disposed of simply because the records of production and cost of feed showed her owner conclusively that she was not paying for her keep. Are there any more cows of that class in Ontario? Why should there be any at all?

Valuing milk at $1 per 100 pounds, the account with each cow for the full twelve months of 1909 stands as follows:—

Cow No.	Yield of Milk.	Value of Milk.	Cost of Feed.	Profit.
	Lbs.	$ cts.	$ cts.	$ cts.
1.	7,190	71 90	24 20	53 70
2.	8,060	80 60	38 60	45 00
3.	6,796	67 96	32 00	41 96
4.	5,713	57 13	24 20	38 93
5.	6,888	68 88	34 59	37 49
6.	6,762	67 62	32 21	37 41
7.	6,022	60 22	28 80	37 42
8.	6,300	63 00	32 49	33 51
9.	5,971	59 71	34 59	28 12

The highest cost of feeding was put at $7.55 per cow in April, when those milking received seven pounds of meal per day (oats valued at $30), 65 pounds of ensilage ($2 per ton), 20 pounds of hay (clover and timothy $8). Cows were on pasture ($2 per month) from May to early November, during which time no grain was fed. No roots were fed at all.

In a herd at St. Hyacinthe, Quebec, a careful record is kept of milk and feed each month. The feed per cow is given as:—

2,440	pounds	grain,	at $23.20	per ton	$28 36
4,350	"	hay	6.80	"	14 75
2,725	"	ensilage	2.30	"	3 15
900	"	roots	.15	per bushel	2 25
5	months	pasture	at $2		10 00
				Total cost of feed	$58 51

Grain was fed every month except October, roots during November and December, and ensilage July to end of December.

The milk yield runs from 5,016 pounds to 9,865 pounds, with an average of 6,900 pounds from 15 cows. The value of the milk is computed at 20 cents per gallon for consumption right on the premises, but even valued at $1 per hundred pounds a good return per cow is indicated, running as high as $40.14 profit made by a cow giving 9,865 pounds of milk. Plenty more of such cows in Quebec are ready and anxious for the chance to show what they can do if liberally fed.

There is a marked variation in the prices given for meal. During three months bran was valued as low as $19 per ton at Innerkip, Ont. Some mixtures, during those months, were peas, oats, barley and bran, $22; bran and oat chop, $25; bran and shorts, $25. In July and August oats were valued as high as $30, while the men feeding oil cake in April and May put the cost as high as $35. In such localities, Innerkip for example, cows were giving 1,100 pounds of milk and 35 pounds of fat in a month at a cost of $4.99 on a daily ration of 24 pounds ensilage, 12 pounds timothy, 5 pounds bran, 2½ pounds pea meal, 1½ pounds oil cake.

Some 5-year-old Holstein grades near Innerkip gave from 8,000 to 9,000 pounds of milk and 300 pounds of fat at a feed cost of $38.

COST OF MILK.

During May in one herd of 9 cows near Belmont, Ont., the cost of feed was put at $6.02 per cow for meal, roots and hay. On this feed one cow gave 1,656 pounds of milk at a cost of 36 cents per hundred pounds, while a second in the same herd gave only 928 pounds of milk, thus costing 64 cents per hundred pounds. During the eight months that these records were kept, one cow produced 9,553 pounds of milk at a feed cost of $28.23, while the other cow gave 6,712 pounds at a cost of $28.70. From the full twelve months' totals it appears that one cow gave 11,255 pounds of milk at a cost of $44.25, while the other gave 7,612 pounds at a cost of $45.70; thus in the one case the milk was produced at a feed cost of 60 cents per hundred pounds, while in the other case it cost only 40 cents. This aspect of the business needs vastly more attention and study by every milk producer; it is of the utmost importance to him to supply an answer to the question concerning each single cow in the herd, what does her milk or butter fat cost? Can I feed her more suitably so as to lower the cost?

In one herd near Rigaud, Que., where records were kept for every month, the production of milk by the 11 cows varied from 4,680 pounds of milk by a 6-year-old grade up to 7,060 pounds, also by a 6-year old grade. The cost of feed is given at the same price for each cow in the herd, but it is obvious that there is considerable difference in the returns on the investment, for the milk varies in cost from 41 to 60 cents per hundred pounds, while for one dollar invested in feed there is an income of $1.59 in the one case, but in the other, $2.39. The feed for this herd is given as 500 pounds

of corn, 400 pounds of hay and 20 pounds of straw for the first four months; in May 12 days' pasture, good clover hay and 3 pounds of grain per day; pasture for the next five months with grain on only six days; and ensilage, hay, green feed and straw in the remaining two months.

The average yield in a herd of 14 cows at St. Edwidge, Que., was 5,525 pounds of milk, 3·5 test, 193·2 pounds of fat.

The cost of feed is given by the owner as:—

2½ tons hay at $9	$22 50
½ ton straw at $4	2 00
62½ bushels roots at 10 cents	6 25
266 pounds meal at $1.40	3 72
Pasture	6 00
Average cost per cow	$40 47

Valuing milk at $1 per 100 pounds, this shows, therefore, an average profit of almost $15 per cow. The highest yield of milk was 6,510 pounds, showing a profit of $25 over the cost of feed; the lowest yield of milk was 3,964 pounds from a 10-year-old grade that calved May 10. Such a cow appears to be kept at a loss.

At Ste. Emelie, Que., the cost of feed of one herd is put at—

133 bundles of hay at $7	$9 33
Straw per cow	3 00
6 bushels of roots at 15 cents	0 90
145 pounds of meal at $1.60	2 32
Pasture	6 00
Average cost per cow	$21 55

Each of the eight cows in this herd gave over 3,300 pounds of milk, thus indicating a profit on each cow. The best yield was 4,296 pounds of milk from an 8-year-old.

A second herd at Ste. Emelie had feed valued at—

225 bundles hay at $7	$15 75
Straw	2 00
20 bushels turnips at 10 cents	2 00
Meal	50
Pasture	6 00
Average cost per cow	$26 25

The eight cows in this herd averaged 3,850 pounds of milk and 166 pounds of fat, showing, if milk be valued at $1, an average profit of a trifle over $12 per cow.

The highest yield was 4,570 pounds of milk, but the lowest was only 2,505 pounds, or a strong contrast between a loss on the year's feeding and a profit of $19.45.

In one herd at St. Clet, feed was valued at—

1½ tons hay at $7	$ 9 33
Corn	1 00
Straw	5 00
Pasture	6 00
Meal	1 00
Average cost per cow	$22 33

The six cows gave on the average 4,728 pounds of milk and 168·5 pounds of fat; the lowest yield was 3,333 pounds, and the highest was 5,550 pounds from a 10-year old, thus indicating a fair profit of over $33 from this animal.

Another member at St. Clet, estimated feed at—

2,200 pounds hay at $10	$11 00
1⅓ tons straw at $4	5 33
8½ bushels roots at 10 cents	85
340 pounds meal at $1.25	4 25
Pasture	6 00
Average cost per cow	$27 43

Five out of the ten cows in this herd gave over 4,300 pounds of milk, thus indicating a fair profit; the remaining five were very close to the danger line of no profitable return for the feed consumed.

At St. Prosper, Que., the average cost of feeding six cows was put by the owner at—

1¼ tons hay at $10	$11 25
1½ tons straw at $2.50	3 75
Roots	6 00
Grain	6 00
Pasture	10 00
Average cost per cow	$37 00

The average yield per cow was 4,312 pounds of milk and 172·8 pounds of fat, varying from 3,825 pounds of milk from an 8-year old up to 4,935 pounds of milk from a 10-year old: thus, while the average profit is low, each cow may be considered as giving a certain return on the investment, if not paying handsomely for her keep.

At Foster, Que., one member put the cost of feed at—

2½ tons hay at $10	$25 00
¼ ton straw at $4	1 00
1½ tons corn at $3	4 50
225 pounds grain at $1.33	3 00
Pasture	6 00
Average cost per cow	$39 50

The average yield from sixteen cows was only 2,683 pounds of milk and 109 pounds of fat, the highest yield being under 3,500 pounds of milk. In this section, in addition to drought, severe damage was done to crops by grasshoppers, so that apparently profits were cut to a vanishing point.

It must be borne in mind, however, that profit accrues from the growth in value of the young stock, from the manure produced and the fertility added to the farms. There would be profit in selling the feed at the prices given above.

At Dixville, Que., the average cost of feed is given as—

1⅞ tons hay at $10	$18 75
Green corn	3 15
25 bushels turnips at 20 cents	5 00
½ ton green oats at $8	4 00
125 pounds bran at $1.25	1 55
Pasture	6 00
Average cost per cow	$38 45

The twelve cows in the herd are credited with a yield of 4,248 pounds of milk and 165 pounds of fat, running all the way from only 2,675 pounds of milk and 125

pounds of fat from a 4-year old, up to 5,575 pounds of milk and 210 pounds of fat from a 7-year old: thus again there is every indication of a loss in feeding at least six cows, but a profit of $17 per head with some of the good ones.

In a herd near Compton, Quebec, where milk and feed records were kept for the full year, the average yield of 15 cows was 4,669 pounds of milk, 3·9 test and 181 pounds of fat. Apart from skim-milk, the creamery value of the milk was 90 cents per 100 pounds for the season, giving an average income per cow of $42.08; deducting from this the average cost of feed, $29.22, the average profit per cow was $12.86.

The poorest cow gave 3,526 pounds of mik and 127·7 pounds of fat, leaving a profit of only $2.09 for the year. The best cow gave 8,044 pounds of milk at a feed cost of $41.73, thus returning $30.66 profit.

The three poorest cows averaged 3,607 pounds of milk and 137 pounds of fat, giving a profit of $4.16 each. With these three cows sold for beef, the average profit per cow for the whole herd would be $2.18 higher.

The three best cows averaged 7,375 pounds of milk and 300 pounds of fat, giving a profit of $27.63 each; that is, just about twice as much milk, *but more than six times as much profit*, as the three poorest cows.

Comparing two cows that gave within 40 pounds of the same weight of milk, it is found that one made $7.69 profit, the other $12.83. Two other cows that gave $7.69 profit each differed very much in the yield of milk, one giving 3,709 pounds, the other 4,196 pounds. Two others that gave a profit of $12.61 each had a difference in the yield of milk of 774 pounds.

It will thus be gleaned that an endeavour was made to feed each cow according to her capacity of production, the cost varied from $25.69 to $41.73. Hay and roots were fed liberally, but no ensilage. A little grain was given except for five months when on pasture. The heaviest feeding was in April, when two cows received as much as ten pounds per day of bran and oil cake.

EXPERIMENTS IN THE COOLING AND NON-AERATION OF MILK FOR CHEESEMAKING.

Report by Mr. George H. Barr, Chief, Dairy Division.

The Dairy and Cold Storage Commissioner.

Sir,—According to your instructions, the experimental work on the care of milk for cheesemaking was continued at the Rideau Queen Cheese Factory, Smiths Falls, during the past season.

The object of the work this year was to secure further information regarding the best method of taking care of milk at the farms and to secure some information as to the extent of the loss which occurs in the manufacture of over-ripe and gassy milk into cheese.

Instead of using the milk from two herds and taking care of it ourselves as we did in 1908, we arranged to use all the milk delivered to the factory by the forty patrons and make it up in two separate vats. The patrons very kindly agreed to treat their milk according to our instructions, and by dividing them into two groups and giving each group different instructions from day to day, we were fairly successful in securing one vat of sweet, clean flavoured milk and one of over-ripe or tainted milk each day. Our instructions were only in regard to the care of the evening's milk, the morning's milk being delivered in the usual way. The treatment given the evening's milk is shown in the various tables throughout this report.

The uncooled milk at the factory was seldom very much over-ripe except after a very hot night, as it was usually all delivered at the factory before half past seven o'clock. A gassy condition of the milk was more frequently found. Two curds were so gassy that they almost floated before dipping.

The patrons delivered their milk in the usual way, all delivering their own except one route of four patrons.

The quantity of milk received each day was from 7,243 to 8.316 pounds. The milk was divided into two vats through a weigh can with two compartments, thus avoiding any mixing of the good and bad milk.

Sixteen patrons delivered their evening's and morning's milk in separate cans.

CURD TESTS.

Curds tests were made of every patron's milk each day, and a record kept of how each patron treated the evening's milk.

The following tables show the different methods of treating the milk at the farms and the number and condition of the curd tests.

TABLE I.—Showing Results of Daily Curd Tests.

Exp. No.	Date.	Vat Number	Treatment the Milk received at the Farms.	Total Curd Tests.	Clean Flavour.	Solid Texture.
					per cent.	per cent.
2	June 11..	3	Cooled without aeration	14	85·7	92·9
		4	Aerated without cooling	22	45·4	59·1
3	„ 16..	5	Cooled without aeration	13	100·0	100·0
		6	Stirred without cooling	23	73·9	91·3
4	„ 17..	7	Cooled without aeration	14	100·0	100·0
		8	Stirred without cooling	21	66·7	76·2
5	„ 24..	9	Cooled without aeration	17	82·4	94·1
		10	Stirred without cooling	18	88·9	94·4
6	„ 30..	11	Cooled without aeration	19	73·7	84·2
		12	Aerated without cooling	17	23·5	52·9
7	July 1 .	13	Cooled without aeration	18	77·8	88·9
		14	Aerated without cooling	19	26·3	47·3
8	„ 2..	15	Cooled without aeration	17	100·0	100·0
		16	Aerated without cooling	20	70·0	85·0
9	„ 14.	17	Cooled without aeration	19	79·0	79·0
		18	Stirred without cooling	17	35·3	53·0
10	„ 15..	19	Cooled without aeration	19	73·7	79·0
		20	Stirred without cooling	19	10·5	47·4
11	„ 16..	21	Cooled without aeration	16	81·2	81·2
		22	Stirred without cooling	19	36·8	37·0
12	Aug. 4..	23	Cooled and aerated	18	44·4	50·0
		24	Cooled without aeration	19	42·1	42·1
13	„ 5..	25	Cooled and aerated	15	60·0	60·0
		26	Cooled without aeration	20	60·0	55·0
14	„ 6..	27	Cooled without aeration	15	66·6	33·3
		28	Cooled without aeration	20	75·0	30.0
15	„ 11..	29	Cooled without aeration	17	76·5	82·3
		30	Aerated without cooling	21	52·4	66·6
16	„ 12..	31	Cooled without aeration	16	75·0	100·0
		32	Aerated without cooling	22	68·1	72·7

The cooled and aerated milk gave a little higher percentage of clean favoured curd tests than the milk cooled without aeration on the evenings of August 4 and 5, but the amount of gas in these tests was very much greater than in those from the milk cooled without aeration. Many of the cooled and aerated samples were very spongy and several floated, while those from the milk cooled without aeration showed only pinholes.

TABLE II.

Method of Treating the Milk at the Farms.	No. of Curd Tests.	Clean Flavour.	Solid Texture.
		per cent.	per cent.
Cooled without aeration	279	77·41	76 00
Cooled and aerated	30	50 00	50 00
Aerated without cooling	120	50·83	62·50
Stirred without cooling	103	54·37	64·07

TABLE III.

Method of Cooling the Milk at the Farms.	No. of Curd Tests.	Clean Flavour.	Solid Texture.
		per cent.	per cent.
Cooled by setting milk cans in water or iced water	116	81·03	80·17
Cooled by setting milk pails in water	98	75·51	76·53
Cooled by setting shotgun cans of water in the milk	58	75·86	70·69

It is quite plainly shown in table No. II. that cooling the milk without aeration gave much better results in flavour than did any of the other methods. Stirring without cooling gave better flavoured milk than did aeration, or aeration and cooling, but we cannot recommend this method, as the milk so treated arrived at the factory in an over-ripe condition when the nights were warm.

Table No. III. shows that cooling the milk by setting the milk cans in water gave slightly better results than the other two methods practiced.

Making a curd of each patron's milk every day indicated very plainly that fine flavoured milk could not be delivered to the factory in rusty or unclean milk cans, even when it was cooled.

TEMPERATURE OF THE MILK WHEN DELIVERED AT THE FACTORY.

The temperature of the evening's milk was taken as it was being emptied into the weigh can, and that of the mixed milk as it was running into the vat. The following tables show the treatment the milk received at the farms each day, the temperatures and acidity when delivered at the factory, also the lowest temperature of the air during the night.

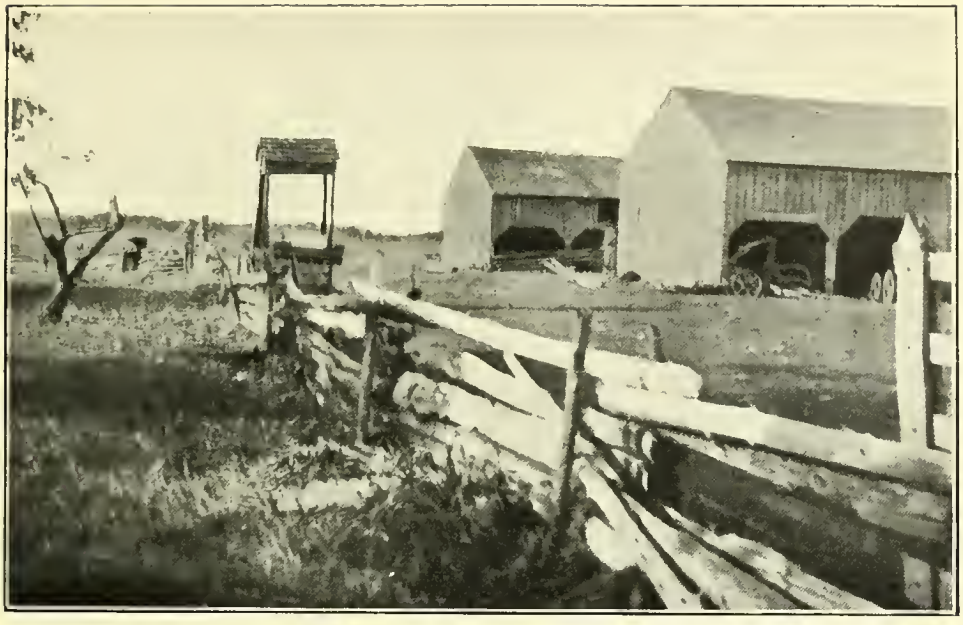


Fig. 1.

On this stand 71 per cent of the curd tests were good when the milk was cooled without aeration. None were good when it was dipped. The milk cooled and dipped on this stand was the cause of the gassy condition in the curd marked 3-A in Fig. 1, Plate II.

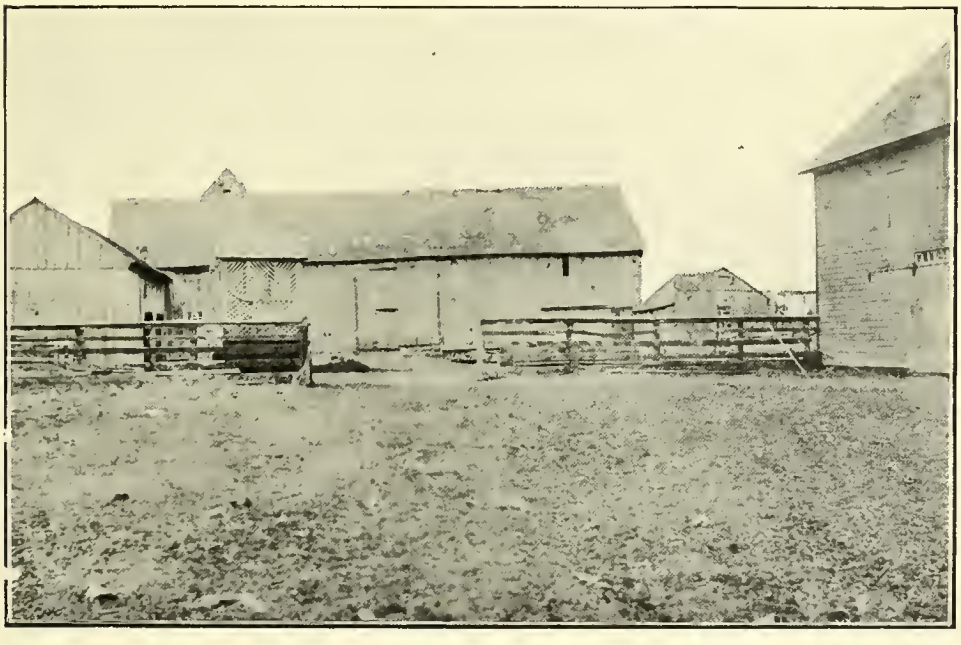


Fig. 2.

On the above stand 70 per cent of the curd tests were clean in flavour when the milk was cooled without aeration and only 17 per cent were clean when the milk was dipped without cooling.

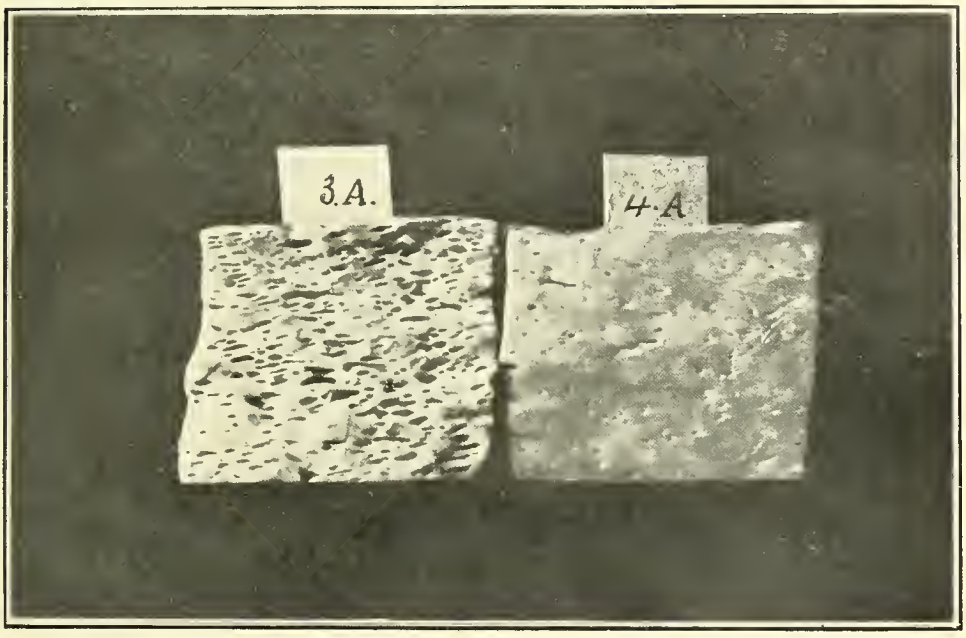


FIG. 1.

3–A Curd made from milk cooled and dipped by half of the patrons.
4–A—Curd made from milk cooled without aeration by the other half of the patrons on August 3, 1909.

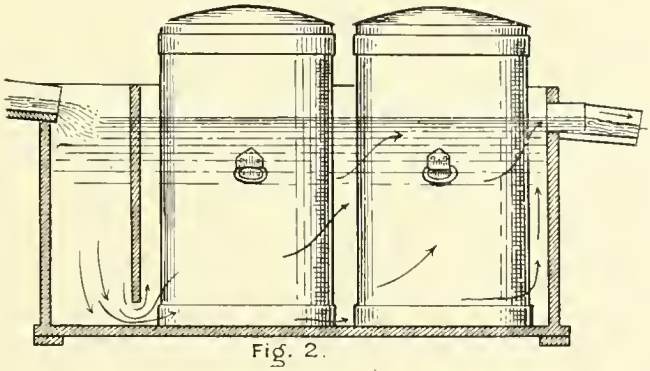


Fig. 2.

Tank for Cooling Milk in Cans.

TABLE IV.—Showing Relation of Acidity to Temperature of Milk when delivered at Factory.

Date.	Vat Number.	Treatment the Milk received at the Farms.	Lowest temperature during night.	Average temperature of evening's milk at factory.	Average temperature of mixed milk at factory.	Per cent starter added to the milk in vats.	When starter was added to the Milk.	Acidity of the milk in the vats when all in.
								per cent.
June 11..	3	Cooled without aeration	.....	.....	73·75	Three-eighths	Milk half in	·20
" 16..	4	Dipped without cooling	.....	.....	75·55	"	"	·21
	5	Cooled without aeration	.....	.....	70·6	"	"	·21
	6	Stirred without cooling	.....	.....	71·36	"	"	·21
" 17..	7	Cooled without aeration	59	.....	72·07	"	First milk in	·20
	8	Stirred without cooling	59	.....	74·80	"	"	·21
" 24*.	9	Cooled without aeration	73	68·8	77·68	.....	.....	·20
	10	Most of it not cooled	73	.....	77·64	.....	.....	·21
" 30..	11	Cooled without aeration	64	62·62	71·63	Three-eighths	Milk about half in	·205
	12	Dipped without cooling	64	67·14	75·23	"	"	·225
July 1..	13	Cooled without aeration	71	68·	73·64	"	Just before setting	·20
	14	Dipped without cooling	71	74·5	76·50	.....	.....	·235
" 2..	15	Cooled without aeration	63	61·7	72·3	Three-eighths	About 1,000 lbs. in vat	·195
	16	Dipped without cooling	63	70·	74·17	.....	.....	·205
" 14 .	17	Cooled without aeration	67	66·	73·5	Three-eighths	Milk about half in	·20
	18	Stirred without cooling	67	69·8	77·4	"	Milk about quarter in	·225
" 15..	19	Cooled without aeration	65	67·1	74·6	"	First milk in	·205
	20	Stirred without cooling	65	72·8	77·4	One-eighth	Just before setting	·215
" 16..	21	Cooled without aeration	70	66·1	74·3	Three-eighths	First milk in	·205
	22	Stirred without cooling	70	73·	78·9	One-eighth	Just before setting	·215
Aug. 4..	23	Cooled and dipped	67	65·	74·4	Three-eighths	Milk about half in	·205
	24	Cooled without aeration	67	.....	76·	"	"	·20
" 5..	25	Cooled and dipped	67	66·	75·5	"	"	·205
	26	Cooled without aeration	67	67·1	73·65	"	"	·20
" 6..	27	Cooled without aeration	67	.....	73·56	"	"	·205
	28	Cooled without aeration	67	.....	74·62	"	"	·20
" 11..	29	Cooled without aeration	60	61·1	69·65	"	First milk in	·205
	30	Dipped without cooling	60	62·	70·86	"	"	·21
" 12..	31	Cooled without aeration	59	63·7	71·7	"	"	·21
	32	Dipped without cooling	59	65·	72·1	"	"	·225

* No arrangement made with patrons about taking care of the milk.

TABLE V.—Average Temperatures of the Milk as received at the Factory.

Method of treating the Milk at the Farms.	Number of Samples.	Temperature of evening's milk.	Temperature of mixed milk.
Cooled without aeration	279	64·88	73·03
Cooled and aerated	30	65·50	74·95
Aerated without cooling	120	67·76	74·06
Stirred without cooling	103	71·86	75·98

There is nearly seven degrees difference between the evening's milk cooled without aeration and that stirred without cooling. This meant that the milk in the vats was sweet when cooled, and overripe when stirred without cooling. No instructions were given to the patrons as to the quantity of water or ice that should be used in cooling the milk. The matter was left to their own judgment.

When asked to cool their evening's milk, the patrons practiced three methods of cooling, as follows:—

TABLE VI.

Method of cooling the Milk at the Farms.	Number of Samples.	Temperature of evening's milk.	Temperature of mixed milk.
Cooled by setting milk cans in water or iced water	115	61·77	71·76
Cooled by setting milk pails in water	104	66·37	74·11
Cooled by setting shotgun cans of water in the milk	71	67·22	76·24

Setting the milk cans in water gave the lowest temperature and consequently the sweetest milk. This is no doubt due to the fact that some of the patrons used ice, and also that larger quantities of water were used when cooling in this manner than when cooling in pails or with shotgun cans.

When the evening's milk arrived at the factory over 69 degrees, or the mixed milk over 75 degrees, the milk in the vats was overripe when all in. There was always considerable tough or curdled cream on the strainer from the uncooled milk, especially when it was dipped. No such condition appeared on the strainer at any time from milk which was cooled without aeration and covered.

EFFECT OF DIFFERENT NIGHT TEMPERATURES ON THE CONDITION OF THE MILK.

The temperature of the air during the night had an effect upon the condition of the milk when delivered at the factory, as shown in the following tables:—

TABLE VII.—Effect of Temperature during the Night on the Acidity of the Milk when Delivered in the Vats.

Lowest temperature during night.	Treatment given evening's milk.	Average temperature of the milk.		When starter was added to milk.	Per cent starter used.	Acidity of milk in vat when all in.
		Evening's.	Mixed.			
						Per cent.
59-60	Cooled	62·40	74·14	First milk in	Three-eighths	·205
59-60	Not cooled.	63·50	71·25	" "	"	·215
63-64	Cooled	62·10	71·63	Milk half in	"	·200
63-64	Not cooled	68·57	74·70	None and half in	"	·215
65-67	Cooled	66·55	75·00	First and half in	"	·202
65 67	Not cooled	71·30	77·90	None		·220
67	Cooled and aerated	65·50	74·90	Milk half in	Three-eighths	·205
67	Cooled only	67·10	74·80	" "	"	·200
70-73	Cooled	67·00	74·00	None and first in	"	·202
70-73	Not cooled	73·50	77·70	None		·220

NOTE.—The 'cooled' milk was not aerated in any way. The 'not cooled' milk was either stirred or dipped.

When the milk was not cooled, it arrived in overripe condition (·22 per cent acidity) as soon as the night temperature went over 65 degrees, while the cooled milk arrived sweet when the night temperature was as high as 73 degrees.

TABLE VIII.—Effect of Temperature during the Night on the Flavour and Texture of the Curd Tests and the Curds in the Vats.

Lowest temperature during the night.	Treatment given evening's milk.	CURD TEST.		CURDS IN THE VATS.	
		Clean flavour.	Solid texture.	Clean flavour.	Solid texture.
		Per cent.	Per cent.	Per cent.	Per cent.
59-60	Cooled	83·8	94·1	100·0	100·0
59 60	Not cooled	62·4	71·8	33·3	33·3
63-64	Cooled	86 6	92·1	50·0	100·0
63-64	Not cooled	46·7	68·9	50·0	100 0
65-67	Cooled	76·3	79·0	100·0	100·0
65-67	Not cooled	22·9	50·2		
67	Cooled and aerated	52·2	55·0		
67	Cooled only	51·0	48·5	50·0	
70-73	Cooled	79·5	85·0	100 0	100·0
70-73	Not cooled	31·5	42·1		

NOTE.—The milk 'cooled' was not aerated in any way. The 'not cooled' milk was either stirred or dipped.

High temperatures at night had practically no effect upon the condition of the curds when the milk was cooled and covered, but a decidedly bad effect when the milk was stirred or aerated without cooling. Even when the nights were quite cool, over 50 per cent of the curds in the vats were gassy and not clean in flavour when the milk was not cooled, but when the temperature of the night was 65 degrees and over, all the curds from uncooled milk were gassy and not clean in flavour.

CONDITION OF CURDS IN THE VATS.

From the four different methods of treating the milk at the frams, the condition of the curds was as follows:—

TABLE IX.—Condition of Curds in the Vats.

Method of treating the Milk at the Farms.	Number of curds.	Curds clean in flavour.	Curds with no gas.
		Per cent.	Per cent.
Cooled without aeration	16	81·25	68·75
Cooled and aerated	2	.....	.....
Aerated without cooling	6	.....	33·33
Stirred without cooling	5	40·00	40·00

This shows very plainly that cooling the milk without aeration gave by far the best results in the curds.

FLAVOUR OF THE CHEESE.

TABLE X.—Showing Effect of Treatment of the Milk on the Flavour of the Cheese.

Method of treating the Milk at the Farms.	CHEESE EXAMINED.	
	When three weeks old by Geo. H. Barr.	On Oct. 16th by G. G. Publow.
	Flavour good.	Flavour good.
	Per cent.	Per cent.
Cooled without aeration	93·7	50
Cooled and aerated	50·0	·00
Aerated without cooling	50·0	·17
Stirred without cooling	100·0	·50

The cheese were made between June 11 and August 12.

The above figures represent what would be called commercially, good flavoured cheese, not a perfect flavour.

The cheese were kept in the factory curing room from six to twelve days, where the temperature was frequently as high as 85 degrees, which simply ruined some of the cheese.

Mr. Publow's judgment was that there was a slight whey flavour in all the cheese. The whey was returned to the patrons in their milk cans and the whey tanks were not kept clean, which would account for this flavour, and shows the importance of having the whey pasteurized and the whey tanks kept clean.

The cheese made from milk 'stirred without cooling' show slightly better flavour than from the other methods of treating the milk, but the texture of these cheese was not as fine as the others, as this milk was nearly always overripe when delivered at the factory.

LOSS OF BUTTER FAT IN THE WHEY.

The loss of butter fat in the whey from milk treated differently at the farm and in different conditions when received at the factory, was as follows:—

	Per Cent.
Cooled without aeration	·20
Cooled and aerated	·22
Stirred without cooling	·22
Aerated without cooling	·24
In sweet clean flavoured condition	·19
In gassy condition	·21
In overripe condition	·25
In overripe and gassy condition	·27

The loss of butter fat in the whey from milk cooled without aeration varied from ·08 to ·28, the loss increasing as the season advanced.

The loss from aerated milk varied from ·18 to ·30; from stirred milk, ·18 to ·27; from aerated and cooled milk, ·20 to ·25 per cent.

The small loss of butter fat in the whey from sweet, clean flavoured milk indicates that there would be little profit in skimming the whey if all the milk was delivered in this condition, and the question may be asked, does it pay to allow the milk to become tainted and overripe through carelessness, causing serious loss of butter fat in the whey, and then go to the expense of installing a butter plant to recover what never should have been lost?

YIELD OF CHEESE.

The yield of cheese is calculated from the weight of the cheese as they were taken from the press. Many patrons of cheese factories seem to give more consideration to the yield of cheese than they do to the care of the milk, apparently forgetting that the condition of the milk when delivered at the factory has a great deal to do with the amount of cheese that can be made from it.

We were unable to get the milk in both vats to test the same per cent of butter fat during the month of June, but by changing patrons from one vat to the other, we succeeded in having both vats test the same after July 1, and were able to make close comparisons of the yield of cheese from different kinds of milk as shown in the following tables:—

TABLE XI.—Effect of the Treatment of Milk on the Yield of Cheese.

Date.	Vat number.	Treatment the milk received at the farms.	Lbs. milk in each vat.	Per cent butter fat in milk.	Per cent starter used.	Acidity of milk at setting.	Time of setting.	Per cent butter fat in whey.	Length of time from setting to dipping.	Acidity at dipping.	Length of time from setting to salting.	Condition of the curds in the vats.	Lbs. of milk to 1 lb. green cheese.	Lbs. green cheese to 1 lb. of fat.
							h. m.		h. m.		h. m.			
June 11..	3	Cooled.....	3,966	3·20	Three-eighths	·21	8 05	·15	3 50	·185	8 55	Good flavour, no gas.....	11·001	2·84
" 11..	4	Dipped.....	3,961	3·30	"	·22	8 09	·18	2 41	·18	10 51	Very gassy	10·815	2·85
" 16..	5	Cooled.....	4,037	3·20	"	·225	9 18	·18	2 57	·20	7 17	Good flavour, no gas.....	10·672	2·92
" 16..	6	Stirred.....	4,109	3·30	"	·235	9 11	·20	2 19	·20	7 34	" "	10·522	2·88
" 17..	7	Cooled.....	4,157	3·35	"	·22	8 55	·18	3 15	·195	6 35	" "	10·846	2·75
" 17..	8	Stirred.....	4,039	3·50	"	·225	8 31	·18	2 54	·195	6 29	" "	10·463	2·74
" 24..	9	Cooled.....	4,589	3·30	.....	·215	8 05	·10	3 40	·19	8 10	" "	11·104	2·72
" 24..	10	Not cooled.....	3,208	3·40	.....	·24	9 00	·27	1 40	185	7 30	Very gassy.....	11·273	2·69
" 30..	11	Cooled.....	4,410	3·50	Three-eighths	·21	8 40	·08	3 55	·195	7 50	Not quite clean, no gas.	10·835	2·61
" 30..	12	Dipped.....	3,706	3·40	"	·23	8 44	.....	1 55	·185	7 16	" " ...	11·411	2·57
July 1..	13	Cooled.....	3,847	3·35	"	·215	8 53	·25	3 12	·19	7 57	A few pinholes.....	11·126	2·68
" 1..	14	Dipped.....	4,469	3·35	"	·24	8 13	·30	1 37	·185	8 02	Quite gassy.	11·378	2·63
" 2..	15	Cooled.....	3,750	3·30	"	·215	9 14	.....	2 41	·185	6 36	Good flavour, no gas.....	10·933	2·77
" 2..	16	Dipped.....	4,172	3·30	.....	·22	9 14	·25	2 01	·185	6 16	Not quite clean, no gas...	10·815	2·73
" 14..	17	Cooled.....	4,321	3·40	Three-eighths	·215	9 00	·22	3 00	·185	7 50	Good flavour, no gas.....	11·252	2·61
" 14..	18	Stirred.....	3,490	3·40	"	·24	9 03	·25	1 25	·19	7 52	Gassy, a lot of butter.....	11·331	2·59
" 15..	19	Cooled.....	4,061	3·40	"	·215	9 06	·15	2 24	·185	6 32	Good flavour, no gas.....	11·164	2·63
" 15..	20	Stirred.....	3,511	3·40	"	·22	8 13	·20	2 11	·19	7 47	Cowy flavour and gassy..	11·568	2·56
" 16..	21	Cooled.....	3,702	3·40	"	·215	8 07	·23	2 43	·19	7 07	Good flavour, no gas.....	11·125	2·64
" 16..	22	Stirred.....	3,778	3·40	One-eighth ..	·22	8 12	·25	2 18	·19	7 00	Quite gassy	11·302	2·60
August 4..	23	Cooled & dipped	3,785	.....	Three-eighths	·21	8 22	·20	3 38	·185	9 38	Bad flavour and gassy....	11·184	.....
" 4..	24	"	3,793	.....	"	·21	8 20	·23	3 20	·185	8 10	A few pinholes.....	11·388	.....
" 5..	25	" & dipped	3,599	3·40	"	·22	8 50	·25	2 25	·19	9 55	Almost a floater	11·308	2·59
" 5..	26	"	3,755	3·40	"	·21	9 00	·28	2 45	·185	7 30	A few pinholes.....	11·117	2·64
" 6..	27	"	3,414	3·40	"	·21	9 02	·25	2 49	·21	10 03	Almost a floater.....	11·211	2·62
" 6..	28	"	3,829	3·40	"	·21	9 09	·25	3 06	·2	8 07	A lot of pinholes	11·362	2·58
" 11..	29	"	3,854	3·50	"	·205	8 08	·23	3 42	·19	8 00	Good flavour, no gas.....	10·98	2·60
" 11 .	30	Dipped.....	3,869	3·50	"	·24	10 00	·30	1 30	·19	6 45	A few gas holes.....	11·141	2·56
" 12..	21	Cooled.....	3,947	3·50	"	·21	8 12	·25	3 23	·18	8 33	Good flavour, no gas.....	11·079	2·57
" 12..	32	Dipped.....	3,887	3·50	"	·24	9 01	·20	1 46	·19	7 17	A few pinholes.....	11·019	2·59

This table shows that when the milk tested the same per cent butter fat in both vats each day, a larger yield of cheese was made from the clean flavoured, sweet milk, except on August 4 and 6, when the poorer flavoured milk made the more cheese. There was a slight mistake made in cutting the curd too soon with the first knife in vat 24 on August 4; otherwise, the work was done as carefully as possible.

Table XIII. shows the yield of green cheese from gassy and from overripe milk compared with milk which was in good condition. The percentage of butter fat and of casein was the same in both milks when milk in good condition was compared with overripe milk, and also when good milk was compared with gassy milk.

TABLE XIII.—Loss of Cheese from Overripe and Gassy Milk.

—	Milk.	Average Acidity at Setting.	Average Time Setting to Dipping.	Average Time Setting to Salting.	Cheese.	Milk to 1 Lb. Cheese.	Cheese to 1 Lb. Butter Fat.
	Lbs.	Per cent.	Hrs. Min.	Hrs. Min.	Lbs.	Lbs.	Lbs.
Milk in good condition..	15,969	·21	3 19	7 51	1,437½	11·11	2·61
Over-ripe milk....	15,715	·24	1 32	7 14	1,401	11·21	2·59
Milk in good condition..	15,311	·21	2 58	7 20	1,366¼	11·20	2·63
Gassy milk	14,673	·21	2 50	8 35	1,294¼	11·33	2·58

Loss per 1,000 pounds of overripe milk, ·83 pounds of cheese.
Loss per 1,000 pounds of gassy milk, 1·03 pounds of cheese.

The loss in cheese yield from manufacturing overripe milk was not as large as we expected it would be, but it is quite probable that a greater loss than these experiments show often occurs in many cheese factories. Being strong-handed, we were able to handle the curds to better advantage than many makers can under ordinary factory conditions, where the help is frequently insufficient for such emergencies. There are other cases in which the work is not done as carefully as it might be. The loss in handling overripe milk is due very largely to the fact that the curd in its early and tender stages must be handled quickly, which usually, though not necessarily, means roughly. If good judgment and care are exercised in doing the work rapidly, there need not be any very serious loss, but if it is done roughly and carelessly, there is no doubt the loss may easily be twice as large as it was in these experiments.

The loss in manufacturing tainted and gassy milk is largely due to the long time the curd must be held after dipping. If such milk is handled very carefully at cutting, and while cooking, the loss of butter fat in the whey should be about normal, but it is very difficult to prevent the loss that takes place while a gassy or tainted curd is maturing.

Although these experiments were not planned to deal with the question of the yield of cheese from milk containing different percentags of fat, some incidental information has been secured on this point, which can be used to good advantage when that subject is investigated.

Samples of cheese covering all the experiments, were sent to Prof. F. C. Harrison, Macdonald College, Ste. Anne de Bellevue, Que., for bacteriological analyses, between September 16 and October 13.

TABLE XIV.—Showing the Percentage of Undesirable or Gas Producing Organisms (B. Coli and B. Aerogenes) in Cheese made on the same days from Milk treated differently at the Farms.

LOT A.		LOT B.		LOT C.	
Cooled and Covered.	Aerated by Dipping.	Cooled and Covered.	Cooled and Aerated.	Cooled and Covered.	Stirred without Cooling.
Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
0·135	0·440	1·459	2·710	2·376	5·167

SUMMARY.

The general results of the work this year confirm those of 1908.

The difference in quality between the milk cooled without aeration and that aerated without cooling was not so striking as in 1908, when we had control of the milk at the farms ourselves. This might be expected, as it is difficult to get forty patrons to cool their milk regularly and keep everything scrupulously clean every day.

Making a curd test of every patron's milk each day showed that some patrons always sent sweet, clean flavoured milk, while others were very unreliable.

All the patrons sent better milk when they cooled the evening's milk and covered it, than they did when they were instructed to treat it in any other manner.

Milk delivered in rusty cans gave bad flavoured curd tests.

Milk from a number of farms was delivered at the factory in a very gassy condition when the patrons were asked to aerate it by dipping. A visit to these farms showed in some cases that the milk had been aerated in what we would consider bad surroundings, as in or near the barnyard; while in others, no fault could be found with the surroundings; indicating that it is practically impossible to tell where it is safe to aerate milk at the farms.

The worst gassy curds we had were from milk cooled and aerated by dipping for fifteen or twenty minutes.

Milk stirred, or aerated by dipping, without cooling, and left exposed to the air during the night, had a tough, lumpy cream that did not mix readily into the milk again.

The loss of fat in the whey is greater from gassy and overripe milk than from sweet, clean flavoured milk.

The loss of fat in the whey increased slightly as the season advanced.

There was considerable variation in the loss of cheese from day to day in manufacturing gassy and overripe milk for which no cause was apparent.

It is apparently difficult to make cheese containing a uniform percentage of moisture.

ACKNOWLEDGMENTS.

I am particularly indebted to Mr. J. G. Bouchard for his careful and painstaking assistance in carrying out in detail the necessary work in connection with these experiments; also to all the patrons of the Rideau Queen cheese factory. They were at all times willing to assist by carrying out our instructions in regard to the care of their milk. Without their co-operation it would have been impossible to carry out these experiments successfully.

I am much indebted to Prof. F. C. Harrison, Macdonald College, Ste. Anne de Bellevue, Que., for making a bacteriological analysis of the cured cheese.

PART II.—EXTENSION OF MARKETS

PART II—EXTENSION OF MARKETS.

From the Chief of the Extension of Markets Division, to the Dairy and Cold Storage Commissioner.

Sir,—I have the honour to present herewith the annual report of the Extension of Markets Division.

As the greater part of the work of this Division is connected with the supervision of railway and steamship facilities for the carriage of perishable products, and as the system of inspection and supervision which we have organized is carried on with little change from year to year, it is obvious that in our annual reports more or less repetition is inevitable and that it is difficult to present this portion of our work in a new light.

In the twelve months under review we have continued our cargo supervision or inspection at ports in Canada and in Great Britain pretty much along the lines heretofore followed, but in a somewhat more comprehensive way, although with no increase of expenditure. We have employed the same number of cargo inspectors, namely, six at Montreal and Quebec during the season of navigation, one at Halifax during the fall and winter months, and five in Great Britain all the year round.

The special iced butter car services in the province of Ontario and Quebec were operated as usual and were carefully looked after by a staff or six inspectors, three of whom were employed at the railway terminals in Montreal, two in travelling over the iced car routes in Quebec and one doing similar work in Ontario.

REDUCED OCEAN FREIGHT RATE ON BOXED FRUIT.

In order to encourage the development of the export trade in early apples, peaches, pears, &c., the steamship agents in Montreal were approached in the month of August with the view of getting a reduction in the ocean freight rate on boxed fruit shipped in cold storage to Great Britain, and as a result the Thomson, Donaldson and Allan Lines announced a rate of twenty-five shillings per ton measurement instead of the old rate of thirty shillings and nine pence. Later on the other lines met this reduction and the new rate thus became generally established.

BREAKAGE OF PRINCE EDWARD ISLAND CHEESE BOXES DURING TRANSIT TO GREAT BRITAIN.

During the fall complaints were received from London respecting the broken condition of Prince Edward Island cheese boxes when landed at that port via Furness Line steamers from Halifax. An investigation was made and it was found that the responsibility for the major portion of the breakage rested with the Intercolonial Railway and was caused as follows: Prince Edward Island cheese are shipped by steamer from Charlottetown to Pictou, N.S., and there loaded in the cars. Frequently the quantity is not sufficient to fill a car and the boxes are then piled five or six tiers high at each end of the car, while the centre is filled with general freight consigned to Halifax firms. When the car reaches Halifax the local freight is removed at the city terminus and the car then shunted to the wharfs. By the time it is placed alongside the steamer the boxes at each end, with nothing to support them, have tumbled down and as a result a considerable percentage are broken. These facts were placed before the Manager of the Intercolonial Railway, who promised to have the matter remedied.

Another factor which helped to break the boxes was the use of rope nets in loading the cheese into the steamers at Halifax, but after some correspondence on the

subject which I had with Messrs. Furness, Withy and Company, they provided platform trucks, such as are used at Montreal, which is a satisfactory contrivance for the safe loading of cheese.

APPLES FOR EXPERIMENTAL STORAGE.

In the early autumn, in accordance with your instructions, seven carloads of apples were purchased for experimental purposes and stored at four different points. We also made the necessary arrangements in March for the shipment of a portion of these apples to Glasgow. (See Part IV page).

REVISION OF BULLETIN NO. 1.

As our supply of Bulletin No. 1, containing the names and addresses of some British importers of farm products, is exhausted, we have now in hand a revision of this list, which should be available for distribution early in the summer.

CARGO INSPECTION.

As the method and scope of our cargo inspection work at Montreal, Quebec, Halifax, Liverpool, Manchester, London, Glasgow and Bristol, have been described at length in previous reports, I do not think it necessary to repeat the details here. In a quiet way this work proceeds from year to year, and while the good that has been accomplished in the aggregate is probably not realized by the average shipper, I am pleased to say that the large cheese and butter exporting firms in Montreal are quite sensible of it, as the following letters show:—

MONTREAL, November 27, 1909.

J. A. RUDDICK, Esq.,
Dairy and Cold Storage Commissioner,
Ottawa.

DEAR SIR,—We take pleasure in stating that the inspection of butter and cheese cargoes at this port and at the ports of discharge in the United Kingdom is a great advantage to the dairy interest of Canada. Since the inspection of cargoes has been put into operation we have less complaints and claims for goods being damaged in transit.

We believe that the fact of inspectors taking note of how cargoes are handled deters steamship companies from being as careless about matters of this kind as formerly, knowing that the matter will be reported.

Besides, the importer in England looks after deliveries much more promptly, as any neglect on their part to do is also reported on by the inspector. Formerly, many importers allowed butter and cheese to lie on the docks for days and even weeks before taking delivery, with the result that the Canadian trade had to pay large claims for damaged goods. Such things are now almost unheard of, because the importer knows that it is easy for us to find out if he had been prompt in taking deliveries or if he had allowed his goods to remain exposed to conditions of weather.

In addition, the fact of exporters being able to know what temperatures cargoes have been carried at is of great importance to shippers of all kinds of perishable or semi-perishable goods.

Therefore, we believe the inspection of cargo is money well spent.

Yours truly,

(Sgd.) JAS. ALEXANDER, LIMITED.

MONTREAL, November 27, 1909.

J. A. RUDDICK, Esq.,
Dairy and Cold Storage Commissioner,
Ottawa.

Government Inspection at Steamers.

DEAR SIR,—With reference to your inquiry as to our opinion as to the work accomplished by the government inspectors at wharfs and as to the advisability of their continuance. We consider that no work that the Department of Agriculture has instituted in connection with the dairy industry of Canada has had such an important bearing or brought about better results than the systematic inspection by your inspectors at the steamship wharfs and at the railway sheds. There is no doubt that since this systematic inspection has been in force it has resulted in more careful handling of the dairy products at Montreal, and has also insured better and more careful delivery at the English ports. We venture to say every Canadian exporter and every importer of dairy products will confirm this statement. Before this systematic inspection was adopted, cheese were often delivered in England with fully 75 per cent of the boxes badly broken and not unfrequently in a heated condition. Now, under your present system of inspection any cheese that are delivered in either heated condition or with boxes broken are at once reported to the shipper. The same applies to butter. The result accomplished is that our Canadian dairy products are now delivered in almost perfect condition. Now, with the competition that we are experiencing with New Zealand dairy products, you can readily see it is of the utmost importance that close supervision should be maintained over these exports to enable us to insure our products landing in England in as good condition as those of our competitors from New Zealand.

We consider Canada is exceptionally fortunate in having such a system of instruction as is supplied by the government inspectors to the cheese and butter factories, but all this would be partially lost, in our opinion, if inspection as to delivery of dairy products to steamers is not also maintained on the wharfs. This, in our opinion, is a most important connecting link with the other. Both, in our opinion, are mainly the reasons why our farmers and merchants have been able to get such good prices the last few years as compared with former years.

Yours truly,
(Sgd.) HODGSON BROTHERS & ROWSON, LTD.

MONTREAL, November 27, 1909.

J. A. RUDDICK, Esq.,
Dairy and Cold Storage Commissioner,
Ottawa, Ont.

DEAR SIR,—It is a subject of general comment and is continually referred to by practically every exporter in the trade who has had an opportunity of observing, that the conditions of carriage of cheese and butter by the steamers sailing from Montreal to the ports in England to which butter and cheese are exported, have tremendously improved, and it is constantly remarked that what has been done in this connection is one of the most meritorious things the government has done in connection with our trade. Fifteen years ago cheese were so badly carried that great injury was done to them in transit; in hot weather they were overheated, being so stowed in the ships that circulation of air was impossible between the packages, and the goods arrived in England heated, damp on the surfaces from sweating, mouldy and worth shillings per hundredweight less than when they left this port. Through the energy of the department all this has been changed; goods are now carried in such a condition that it is a most unusual thing to have any complaint of their condition on arrival. They are so

stowed in the vessels that air circulates freely amongst the goods and every precaution is taken to see that no damage of any kind occurs. Generally, I believe that every person in the trade will endorse everything I have said in this connection. It is the one thing that stands out prominently in the handling of dairy products, and for which the whole trade here give the government credit.

Yours truly,

(Sgd.) LOVELL & CHRISTMAS, LTD.,
per R. M. Ballantyne,
Managing Director.

Montreal, November 27, 1909.

J. A. Ruddick,
Dairy and Cold Storage Commissioner,
Ottawa, Ont.

Dear Sir,—In reference to your inquiry as to whether the cargo inspection has been useful and served a good purpose or not, we beg to say that, in our opinion, it has been a splendid check on the steamship companies, and it has stimulated them to give us a better service.

The inspection at ports in England on arrival has also served to bring about a better handling of the goods and has been a great help to shippers from Canada in confirming our complaints to factorymen of the necessity of using better boxes and taking greater care in putting up both butter and cheese in better condition for the English markets.

We may add that we think also the refrigerator car inspection has served a like purpose.

During past years we have sometimes felt that our English friends were rather severe in their complaints; but the presence of inspectors at the port of arrival has served first, to modify their views, and, finally, to draw from them the compliment that there has been great improvement both in the condition and in the quality of Canadian cheese and butter exported from Canada.

Yours truly,

(Sgd.) A. A. AYER & CO., LTD.,
per A. A. Ayer,
President.

RELATIONS WITH STEAMSHIP COMPANIES.

The fact that it is the duty of the cargo inspectors to watch the loading and unloading of the steamers, the stowage of the freight in the ships, &c., and to report instances of rough handling or improper stowage, might lead one to suppose that the relations between the department and the inspectors on the one hand and the steamship companies on the other are not altogether harmonious. However, in justice to the shipping companies I must say that such is not the case, and although our cargo inspectors at Canadian ports have no legislative enactment behind them, their authority has never been questioned by the steamship companies and they are afforded every facility to carry on their work. In Great Britain also the inspectors are allowed on the docks and in the ships only by the courtesy of the steamship companies, but on neither side of the water have we ever had any serious trouble. The shipping companies realize to a greater extent than is commonly supposed that their interests are bound up with those of the producers and shippers and that whatever is done to promote and develop the export trade in farm products cannot fail to benefit their business as well.

During the past year our cargo inspectors in Great Britain transmitted to me letters which they had received from the managers of the steamship companies at the several ports, in which the writers have expressed their approval of the department's scheme of cargo inspection, and I quote two of these letters as typical of them all.

Letter from the Agent of the Allan Line Steamship Company at Glasgow, dated January 3, 1910.

'We have been asked to give an expression of our opinion of the results of the work done by the inspectors of the Department of Agriculture at the landing of all Canadian produce.

'It is the duty of the inspector to be in attendance at the discharge of all steamers carrying Canadian produce, so that he may be able to report fully to the department. The principal imports from Canada are cheese, hams and apples in barrels and boxes, and the department calls for a report by the inspector of the stowage on board the steamer, the methods and care taken in handling during discharge, the ventilation provided and the condition of the contents. A special report is made out for butter and green fruits carried in the refrigerator chambers, and a comparison is made of the temperatures recorded daily on the voyage by the reading of the steamer's thermometers and the reading of a machine called a 'Thermograph,' which is put on board by the department at Montreal.

'We understand that a thorough inspection of all shipments is made at Montreal and the whole system has been organized so that the department may have all possible information. We have given every facility to the department to enable it to carry out its objects, and have formed the opinion that when the work is done by a thoroughly competent inspector the supervision exercised has good results and it is a mutual advantage to the carrier and consignee. In this respect we have been very fortunate in Glasgow. We cannot speak too highly of the efficient manner in which the cargo inspector discharges his duties, and we have every confidence in his capabilities as an expert. His tact, his fairness in dealing with reports and his unfailing courtesy have gained for him the respect of the trade.'

Letter from the Agent of the Canadian Pacific Steamship Line at Bristol, dated January 15, 1910.

'I have no hesitation in saying that the steamship lines are quite in accord with the very excellent system of cargo inspection as carried out by your department at this port, and, while it is undoubtedly a check on the steamship lines, yet the interests of the lines and your department are, as far as I can see, entirely identical, and it is to our common interest to improve wherever we can the carriage of Canadian produce.

'Working, therefore, on this common interest, we welcome any criticism which tends to the improved landed condition of Canadian produce, believing, as we do, that the better we are able to land the goods, the better for the development of Canadian trade interests in this district.'

THERMOGRAPHS.

In this report I wish to emphazise the value of the thermograph in our work, as it has been of the very greatest assistance in bringing about improvements in connection with both ocean and railway transportation.

These instruments were first used by the department in the year 1900, when thirty were purchased. Each year since an additional number has been bought, so that in the coming season of 1910 we shall have a total stock of two hundred and thirteen thermographs, made up of two hundred that will record for fourteen days, ten that will record for thirty-five days and three than will record for seven days. According

to the makers of these instruments, the Canadian government has been the largest purchaser of thermographs in the world, and I think I am not in error in saying that in no other country are so many thermographs in use either in a public or private capacity. The fourteen-day thermographs cost the Department $32.25 each in quantities of twenty or more, and I presume that a higher price would be charged for a single thermograph. The above figure covers also a supply of ink and fifty charts.

All our thermographs are carried in locked wooden boxes which are perforated so as to admit the air readily. This enables the instrument to be stowed with cargo in the refrigerator chambers and in the ordinary holds of ships and in freight cars on our railways. If the thermograph is firmly braced, a good temperature record can be obtained in ordinary freight cars, although the conditions are very adverse owing to the vibration and jolting of the car. When a thermograph is carried in a car it will indicate on the chart the delays in transit as well as the temperature, because, when the car is motionless the line is fine and distinct, whereas, when the car is in motion the line is more or less blurred.

In the season of 1909-10 four hundred and fifty-one records of temperature were obtained in steamers sailing from Montreal and Quebec, and twenty-three in steamers sailing from Halifax. These records indicated every variation of temperature each day of the voyage and were of great assistance to the refrigerating engineers in the ships, as, if any unusual fluctuation was shown, they tried to discover the cause and to prevent a recurrence in subsequent voyages.

When a ship in which thermographs have been placed reaches port in Great Britain, our cargo inspector there removes the instruments as soon as they become accessible and takes off the charts, which he mails to the office at Ottawa, together with a memorandum giving the name of the vessel, date she arrived and date thermograph was removed. When the charts are received here full particulars are written on the face, such as steamer's name, sailing date, port of destination, where placed in ship, kind of produce placed with, date of arrival, &c. The chart is then used as a negative and six blue print copies are made, two of which are retained in the office, one is sent to the Montreal Board of Trade, one to the steamship agents, one to the chief engineer of the steamer and one to our Montreal office.

During the past year we placed thermographs in cars carrying tender fruits from the Niagara peninsula and western Ontario to the Canadian Northwest; in cars carrying butter to Montreal and apples to St. John, and also in steamers sailing from Montreal to European and South African ports. We also used them to obtain accurate records of temperatures in commercial cold storage warehouses, which are under government subsidy, and in creamery cold storages for which the departmental bonus was applied for. In short, we found the thermograph an invaluable instrument in connection with a great many places of our work, and we hope to use it even more extensively in the future.

PRICE INVESTIGATIONS.

In the course of the year lengthy comparative statements were compiled by this division showing weekly market quotations for live hogs, bacon and hams in several markets in Canada and the United States and in Liverpool, extending over a considerable period of time. Another matter dealt with somewhat fully was the comparative cost of flour and bread in Chicago, Toronto, Montreal, Ottawa, Liverpool and London. Full reports on both these subjects were prepared and submitted to the Honourable the Minister of Agriculture.

A British Columbia Dairy Herd.

KETCHAN GRAHAM.

The late Ketchan Graham of Belleville, Ont., was one of the pioneers of organized dairying in Canada. In company with the late Hon. Robert Reid, he built the first cheese factory (Front of Sidney) in the Belleville district in 1866 and was the first president of the Dairymen's Association of Eastern Ontario.

SESSIONAL PAPER No. 15a

THE EXPORT BUTTER TRADE.

In the last three fiscal years the exports of butter from Canada have been as follows:—

Year ended March 31.	Lbs.	Value.
1908	4,786,954	$1,068,703
1909	6,326,355	1,521,436
1910	4,615,380	1,010,274

The quantity of butter shipped from the port of Montreal during the season of navigation in 1909 was 39,447 packages, compared with 93,766 packages in 1908, and 66,896 packages in 1907. With the exception of 150 packages carried in ordinary storage and 79 packages in cooled air, all the butter exported from Montreal in 1909 was carried in cold storage.

The following table shows the comparative temperatures of butter for the past five years when delivered to the steamers at Montreal and when unloaded at the port of discharge in Great Britain.

—	No. of Pkgs. Tested.	Average Temperature at Montreal.	Average Temperature at Port of Discharge.	Average Increase in Temperature During Voyage.	Average Reduction in Temperature During Voyage.
		Deg.	Deg.	Deg.	Deg.
Montreal to Liverpool—					
Season 1905	843	39·3	24·9		14·4
" 1906	456	39·2	21·4		17·8
" 1907	183	33·7	23·1		10·6
" 1908	86	37·5	25·0		12·5
" 1909	43	37·6	25·7		11·9
Montreal to London—					
Season 1905	859	40·2	26·6		13·6
" 1906	527	41·7	20·5		21·2
" 1907	217	36·2	15·3		20·9
" 1908	153	39·6	18·2		21·4
" 1909	87	36·3	22·9		13·4
Montreal to Bristol—					
Season 1905	667	36·9	23·9		13·0
" 1906	361	36·9	23·9		13·0
" 1907	186	35·4	22·9		12·5
" 1908	226	35·3	23·5		11·8
" 1909	148	31·5	21·3		10·2
Montreal to Glasgow—					
Season 1905	403	35·8	28·7		7·1
" 1906	374	35·0	24·1		10·9
" 1907	183	35·9	19·2		16·7
" 1908	75	35·0	23·9		11·1
" 1909	79	32·4	22·7		9·7
Montreal to Manchester—					
Season 1905	87	34·4	30·4		4·0
" 1906	33	41·2	38·8		2·4
" 1907	7	10·9	34·0		6·9
" 1908					
" 1909	11	28·8	33·5	4·7	

The report of our Glasgow inspector mentions the fact that Canadian butter was promptly lifted at that port last season. The improvement in this respect was partly due to a suggestion made by the inspector to the steamship companies that they should notify the different consignees by telephone as soon as their butter was landed and

passed by the Customs. This plan was adopted and that it worked well is shown by the results.

LETTERS FROM IMPORTERS.

As usual this division has received during the year letters from a number of firms in Great Britain who are large importers of dairy produce. Most of these letters refer to cheese, but the following two extracts have reference to the butter trade.

From W. Titley & Sons, Bristol, dated February 14, 1910.

'Owing to high prices, we have received very little butter; indeed a large portion of what we contracted for we re-sold the other side.

'There is still much to be desired in regard to packages and the paper that is used; neither compare favourably with New Zealand and Australian packing.'

From W. & F. Gilmour, Glasgow, dated January 10, 1910.

'Butter.—We regret to say that Canada has only been able to send us a very small quantity of butter during the past season, but we hope the time is not far distant when she will hold a place in the British market for her butter similar to what she holds in the cheese trade. All the conditions are ready to cope with the trade, if the production is sufficient, as we have a good and quick transit, and given 'choicest' quality of butter, our market is willing to take any quantity and pay top prices for a suitable article.

'We want a supply from Canada in the summer similar to what we are presently receiving from New Zealand and Australia in the winter.

'We only imported a few small lots of butter during the season, one or two of which were "choice quality," but generally, the others were not so satisfactory.

'The Danish standard of quality should be the factoryman's aim, as he will find there quality, texture and saltness suitable for the consumer on this side.'

THE EXPORT CHEESE TRADE.

The following table shows the quantity and value of cheese exported from Canada in the fiscal years ended March 31, 1904 to 1910 inclusive.

Year ended March 31st.	Lbs.	Value.
		$
1904	242,432,366	25,975,998
1905	216,080,606	19,969,363
1906	214,438,960	23,679,419
1907	213,644,643	26,160,856
1908	189,710,463	22,887,237
1909	164,907,139	20,384,666
1910	180,859,886	21,607,692

The quality of the cheese exported during the season of 1909-10 was very satisfactory and its condition on arrival at ports left little ground for complaint. Unfortunately not so much can be said regarding the condition of the packages when they reached the warehouses of the consignees, as the percentage of broken boxes was usually very high. The truth of the matter is that a great many boxes are shipped that are only fit for kindling wood and the remarks in the letters which follow, regarding broken boxes, are quite justified by the facts. The breakage is not caused by rough handling during transit, but is due to the poor quality of the wood of which many of

the boxes are made and to the carelessness of many cheesemakers in using boxes which do not properly fit the cheese.

Another matter which calls for adverse comment by the merchants over-sea is the discrepancies which they find between actual and marked weights in occasional lots of cheese. A loss of ten pounds on even an odd box of cheese in each shipment means considerable to the importer in the aggregate, but greater than the monetary loss is the feeling of irritation which is developed in the merchant who considers he is being defrauded. This year an effort will be made by this branch to check this evil, which, if allowed to grow, will undoubtedly hurt our export trade.

LETTERS FROM MERCHANTS IN GREAT BRITAIN.

The following letters contain a review of the Canadian export cheese trade for the year 1909-10 from the standpoint of the Old Country importer.

From Messrs. Geo. Wall & Co.—Lovell & Christmas, Ltd., Liverpool, dated February 15, 1910.

'Cheese.—Ontario has been very good throughout the season; Townships fair—no improvement on previous years; Quebecs much improved in make and quality.'

From Messrs. Andrew Clement & Sons, Ltd., Manchester, dated February 16, 1910.

'The quality of Canadian cheese this year, we think, has been quite up to average, and of late we have had no cause of complaint regarding boxing or the condition in which goods are received from the shipping companies' hands in both Manchester and Liverpool. Cheese appear to be handled in the discharging much better in Liverpool than in Manchester, yet we think that Manchester has improved this year, as goods have not been delivered to us in such a deplorable state as we have experienced in some of the years gone past, to which condition you will remember we drew your attention.'

'We have had one or two parcels waxed, and buyers are getting more accustomed to this treatment and do not resent it so strongly as they did at its inception. There is a marked improvement in the method of waxing, in that the covering is more slight, and what retailers complained of was, we think, that the waxing was too thickly done and sealed off in pieces. Cheese in our opinion are not improved by this method, but then importers have to consider the saving in shortweight and will, we are certain, encourage this treatment more and more. Still we are of the opinion that cheese that are allowed to mature in the natural way are of finer quality than those that are waxed, which treatment, though keeping the cheese perfectly mild, does not allow of them maturing to a rich flavour.

'We have several times asked our Montreal house to take up the point of bad weights with shippers, and have sent claims which our Montreal house find extreme difficulty in getting shippers to recognize. The average shortweight allowed on cheese is in many cases quite insufficient, and we feel quite certain is wrong in many instances, as goods could not possibly have lost the difference between the short weight allowed to us and what we find on weighing them immediately on arrival at this side, and we strongly assert that our position is right, even against the document of a certified weigher.

'We shall be interested to hear if you have any other complaint from importers on this point, as it is very important to importers and is getting so aggravating that it is bound to be brought up before the associations at this side.'

From Messrs. W. Titley & Sons, Bristol, dated February 14, 1910.

'In regard to cheese, we can only repeat our old complaint that the boxes are too frail for the weight of the cheese they contain.

'If this matter could be rectified so that the boxes remained intact, the cheese would keep much better and there would be less shrinkage.'

From Messrs. G. Bradbeer & Co., Bristol, dated February 14, 1910.

'We have very little that we can report to you as to the working of the last season and have not a great deal to complain about. The bulk of our shipments have come to hand in a fairly satisfactory condition and in no case has there been any damage done other than of a very trifling character. The principal difficulty that we have had to contend with has been the broken condition of the boxes, especially the shipments of eastern cheese. Many of these have been delivered to us in a most shocking condition, not only involving a considerable amount of labour in tying up the boxes, but seriously interfering with the value of the goods themselves, and we think some reform in this direction should be carried through without delay, as shippers will not be inclined to import goods to anything like the same extent they would do otherwise.'

From Messrs. Spear Brothers & Clark, Ltd., Bristol, dated January 19, 1910.

'With reference to report on Canadian cheese shipped to us this season; the quality on the whole we think has been up to the usual standard. We have occasionally found in some lots one or two cheese that have been quite different from the rest. They appear to have no quality whatever in them. They cut hard and dry and we have come across a few cheese with large spots of white curd in them and in one or two cases have been obliged to make rather heavy allowances.

'The condition of boxes is about the same as usual. There is certainly room for great improvement in this particular.

'The average losses continue to be much heavier than we think they should be. This is a matter that should be gone into very closely by all the shippers on the other side. The heavy loss takes away, in many cases, the whole of the profit.

'We should like more Brockville cheese to be stamped on the top of the cheese with the Brockville stamp. Several customers like to see this, and it at once gives them the assurance that they are Brockville cheese.

'The past year again has not been very encouraging to us on this side of the water, and it appears to us that year by year we are paying much too high prices for the summer made goods.

'The New Zealands now are a very important feature in the cheese trade, and as far as we can see will be more so year by year, and there is a greater need than ever that the Canadian cheese should be of the very finest quality in every way.'

From Messrs. James Leggat & Co., Glasgow, dated January 8, 1910.

'The Canadian cheese trade has been pretty much a repeat of last few years. The quality continues much about the same and the price this year has varied very little during the whole season.

'We would prefer that cheese should be made from 75 to 84 pounds, and not more than 84 pounds in any case; and that the boxes should be made stronger as many of them reach us badly broken.

'Cheese makers should be more particular in weighing cheese, as we have sometimes to complain of shortweights and also of irregular weights.'

From Messrs. W. & M. Gilmour, Glasgow, dated January 12, 1910.

'We have imported a slightly larger number of Canadian cheese this season and on the whole, speaking generally, the quality and condition was equal to former seasons' make. There is one tendency, however, which we would strongly ask your cheese makers to guard against, and that is the fault of over-acidity. This class of

cheese is not wanted in our market and unfortunately we frequently find a few cheese even among our best lots with this fault, and wherever it is found it spoils the even quality of the lot. It would be far better that these cheese (usually one or two days' make) should be laid aside at the factory and disposed of to best advantage; it would certainly improve the balance by doing so and give the buyers here a better impression of the superior quality of Canadian cheese.

'We would also suggest for our district a softer texture, more like the make of our best Scotch cheese. This remark is really only applicable to the early summer make, as we find the late Augusts and September, as a rule, suitable for our market.

'We have still occasion to grumble at the tightness of the boxes that are used, and while this complaint has been considerably lessened, there are still the odd lots that cause considerable trouble, and when re-weighing is necessary the boxes have to be broken before the cheese can be taken from them. There is also a slight tendency to slimness in some cases, causing the boxes to give way in handling, but we believe the object to be gained here in the saving of wood which, we are led to believe, is becoming a scarce commodity even in Canada.'

From Messrs. Herbertson & Hamilton, Glasgow, dated January 13, 1910.

'The past season has not been a favourable one to importers in the Canadian cheese trade, prices having been uniformly too high compared with those ruling for home produce.

'The condition of both the cheese and boxes on arrival here has been satisfactory, and shows that proper care has been taken in handling during transit.

'We have, however, had some complaints of quality, the most serious being regarding the keeping properties of the June make. In many cases, these cheese showed a tendency to mite badly, and go damp both on top and bottom. This is not an isolated experience, and has caused loss not only in Glasgow, but shipments both to Leith and Hull have developed similar faults.

'In the summer made goods, we had complaints of openness of texture and brittleness in cutting, and the September and October makes in not a few cases showed a pastiness and lack of flavour which compared unfavourably with the previous season's make. Possibly climatic conditions in Canada had something to do with the irregularities we complain of, but we are afraid that at least in some cases, the blame must be laid on the shoulders of the factorymen. The keen competition for patronage, and the effort to take as large a quantity of cheese as possible out of a given amount of milk have, we are afraid, in some cases at least, tempted makers to put quantity before quality.

'We are pleased to urge very strongly that every cheese should be legibly dated when made, and until this is done the business will never be on a satisfactory footing.

'This past season, dealers who do only a legitimate week to week trade, have been very considerably handicapped by speculators selling in April and May, June-made cheese for July shipment; and again in July selling September-made for October shipment, at prices shillings below what legitimate traders could possibly offer at. The result has been seriously to interfere with business, and while we are not in a position to absolutely prove the statement, we have not the slightest doubt that many of the cheese shipped on those speculative contracts were neither Junes nor Septembers. If each cheese was correctly and legibly dated when made, this illegitimate system of business would be rendered so dangerous that the game would not be worth the candle.

'This matter closely concerns the factorymen and farmers, because if the firms on this side who take the weekly output of factories at market prices are to be brought into regular and long continued losses through the speculative manipulation of the market, it is clear that the trade will ultimately fall into the hands of the speculative interests, and the makers in Canada will be placed at a very serious disadvantage in consequence.'

From Messrs. Jas. Davidson & Co., Glasgow, dated January 19, 1910.

'This season we have handled several thousand boxes of cheese, mostly of the highest grade, and we can with pleasure say that they have given us the utmost satisfaction. Colour, texture and flavour have been uniformly good, while we think the keeping qualities show much improvement on many former years. We have not observed so much slackness in the texture this season and open and perforated cheese we have not seen. The only objectionable features which we might refer to, and which are easily preventable, are the greenness of the cheese when delivered to us. Obviously this is entirely in the factorymen's hands and can quite easily be remedied by their retention on the shelves of the factory for a few weeks longer. The other point is the frequent wretched condition of the boxes. It is no exaggeration to say that 30 to 50 per cent of the boxes are badly broken and tied up with ropes, presenting a very ragged and broken-down appearance which greatly detracts from their value. We think most of this could easily be avoided if greater care was exercised in transit.'

From Messrs. Mitchell & Smith, Dundee, dated March 7, 1910.

'In regard to cheese, the quality this year has been fairly regular, but we have the old difficulty of broken boxes. These boxes have been becoming thinner and thinner, until now it is a common thing to have close on 25 per cent of the boxes broken in transit. This, of course, has arisen from the desire of the factorymen to get their boxes as cheaply as possible, and this has forced the box makers to thin them down until they are really not fit to stand the journey.'

THE EXPORT OF FRUIT TRADE.

The following table shows the quantity and value of apples exported annually from this country for the past seven years:

Year ended March 31st.	Barrels.	Value.
		$
1904	1,577,285	4,529,500
1905	997,488	2,551,474
1906	1,280,789	4,217,704
1907	998,618	2,702,623
1908	1,629,400	4,823,645
1909	1,092,090	2,804,282
1910	1,604,477	4,417,926

It will be noted that the quantity of apples exported during the past year was the second largest on record, although a big crop was not expected. Such an unlooked for volume of export trade would be a very proper matter for gratification were it not for the fact that the country would have gained in every way if one-third of the apples exported had never been shipped, but had been kept at home and sent to the evaporators, cider mills, &c. It is generally recognized by those who have the best interests of the trade at heart that not one barrel of No. 3 grade apples should be sent abroad, yet in the season of 1909-10 thousands of barrels of this grade were shipped from Ontario and Nova Scotia to Great Britain, flooding the markets and reducing the price paid for good apples, and worst of all lessening the consumption of apples by turning the people to bananas, oranges and other fruits. Sales catalogues received by this office from brokers in the Old Country shows sales of No. 3's at from five to eight shillings per barrel, the average of which is just about the cost of the barrel

plus transportation and delivery charges, commission, &c. If this truck had not been shipped there would have been a splendid market in Great Britain all season with an active demand and good prices. Instead the market went to pieces towards the end of the Montreal shipping season, due to heavy shipments of low grade stock, and it was the middle of January before it recovered. Shipments continued large with a considerable proportion either of poor grade or out of condition, and as a result the market was more or less uncertain until the end of the season. It is generally agreed that the quality of Canadian Spies was not up to the standard of former years and there was, therefore, more waste than usual in shipments of this variety.

SHIPMENTS OF APPLES FROM THE PORTS OF MONTREAL, HALIFAX, ST. JOHN, &C., SEASON OF 1909-10.

From Montreal to—	Barrels.	Boxes.
Glasgow	239,539	27,659
Liverpool	183,731	1,726
Manchester	75,622	2,390
London	21,443	166
Bristol	15,920	246
Aberdeen	3,116	383
South Africa	967	320
Antwerp	46	
Leith	2,069	
Havre	23	20
Hull	1,345	
Hamburg	15	
Rotterdam	11	2
Total	543,847	32,912

Of the foregoing 5,138 barrels and 3,304 boxes were carried in cold storage, 2,447 barrels in cooled air and the balance in ordinary storage.

From Halifax to —	Barrels.	Half-barrels.	Boxes
London	433,639	519	3,493
Liverpool	169,341	38	370
Glasgow	38,409	67	189
Newfoundland	14,597	4	3
West Indies	4,878		
South Africa	2,322		830
Total	663,186	628	4,885

19,053 barrels and 830 boxes were carried in cold storage; the balance in ordinary storage.

In addition to the above Halifax exports there were shipped from other Nova Scotian ports the following:

From Yarmouth to Boston . . . . . 5,993 barrels.
" Annapolis to London . . . . . 37,000 "
" Granville to London . . . . . 3,000 "

Total . . . . . 45,993 "

Estimating the local sales at 135,000 barrels brings the total sales of Nova Scotian apples, crop of 1909, to the record breaking total of 834,179 barrels, 628 half barrels and 4,885 boxes.

From St. John to —	Barrels.	Boxes.
Liverpool	26,499	3,461
London	20,760	.....
Glasgow	16,415	1,095
Manchester	4,595	400
Bristol	1,681	.....
Total	69,950	4,956

The above figures include 3,510 barrels and 1,300 boxes which were carried in cold storage.

BROKERS' CHARGES ON CANADIAN FRUIT.

I have felt for some time that the fixed charges of brokers in Great Britain on boxed fruit in general and pears in particular are too high, and I have endeavoured during the past year to secure a reduction in these charges in the Glasgow market. After considerable correspondence our inspector wrote on March 18 that the leading brokers had agreed to a reduction of two pence on cases and one penny on half cases of pears, making the charge for landing, delivering, &c., four pence and three pence respectively. Of course, the broker's commission remains at the rate of 5 per cent. No change was made in the charge on boxed apples, which was left at sixpence.

During the past two years a considerable number of account sales received by Canadian apple shippers from consignees in Great Britain have passed through my hands, and I find that the fixed charges, apart from commission, on apples in barrels, run about as follows:—

In Glasgow, 18 to 22c. per barrel; in Edinburgh, 20c. to 28c. per barrel; in Liverpool, 20c. to 24c. per barrel; in Manchester, 24c. per barrel; in London, 22c. to 28c. per barrel.

This charge is levied to meet the cost of landing, delivering, dock and harbour dues, porterage, &c., but it is alleged that the sum expended per barrel is less than that charged by the broker, so that, if this is the case, he has a nice little profit on every barrel he handles, in addition to his commission of 5 per cent. The worst feature of a scheme of this kind is not so much the actual toll taken from the shipper as the fact that the broker, because of the rake-off on these charges, is not inclined to discourage the shipping by his agents or by those to whom he has advanced money, of No. 3's and culls, which are such a detriment to the Canadian apple trade.

LETTERS FROM FRUIT BROKERS AND MERCHANTS.

From Messrs. James Lindsay & Son, Ltd., Edinburgh, dated January 10, 1910.

'*Re* our experience in the apple trade this season so far as it has gone:—

'In the beginning of the season summer apples commenced fairly well and the packing was fairly correct, realizing fairly satisfactory prices for every one concerned.

'Winter apples.—First shipments of these were fairly good and continued to come good for a certain time, and prices went gradually higher. So soon as shippers found out that prices were gradually going better they commenced to ship any sort of quality. Apparently they had thought that buyers here would give prices for anything, no matter what it was like, but they were very soon disillusionized in these opinions, as, whenever such quality landed in this market prices began to drop at

once and as heavy shipments of a similar grade continued to come forward, prices went off altogether; indeed the goods became almost unsaleable. Many parcels were horribly packed and were of most wretched quality, and not only did such faulty packing exist, but goods were most incorrectly branded, which showed gross carelessness on packers' part.

'Had the packers continued putting up honest quality of fruit and been careful as to branding, not only the quality but the name of the sort, and also branding on the proper end of the barrel, we are of opinion that prices would have continued satisfactory throughout the season, but it is utterly impossible for buyers to go on purchasing goods that they find are entirely different from what they expected, so that packers have no others to blame for the bad prices but themselves, and under such circumstances packers cannot expect any other results but what have taken place here now.

'When they adopt similar principles again the same thing will happen, so that the only way to avoid it is to pack right and brand the goods accordingly.

'Many of the latest shipments coming forward have also been badly frozen previous to being packed, and the bulk of the worst frozen apples are found in the bottoms of the barrels, down about the quarter hoops. That is where the worst frozen apples have been placed. Understand the freezing did not take place after they were packed in the barrels. It was previous to packing, because, the damaged apples are right where we describe, between the centre and the quarter hoops, at the bottom end, and are even mixed with good sound apples amongst them. Now, freezing after packing freezes all the apples outwards first, and there are none missed. They are not part frozen and part unfrozen. They are all frozen when frozen in the barrel.

'It would pay packers not to put those in the barrel at all, as they give way before they land here and the consequences are the goods land slack, and the buyers lose them unless they can sell them off at once, and even then they give no satisfaction to those who purchase them for consumption.

From Messrs. Thompson & Mathieson, Glasgow, dated January 15, 1910.

'In reviewing the Canadian apple season our experience in the early part was altogether satisfactory. We do not remember ever having handled finer or better packed apples. These met with a ready sale, at good prices. A change, however, set in about the first week in December. Canadian apples in some lots showed signs of being more or less frozen. There was also a marked difference in the quality; the fruit appeared to have lost, in some measure, its early freshness, an undue proportion of apples at this time arriving of a secondary quality, No. 2 apples largely predominating. Under these conditions prices broke away and came to a low level, and speculators who were much involved lost heavily.

'There was apparent this season something of a difference in the normal varieties of apples coming from Canada. We had this year an unusually large supply of Northern Spy apples, and a marked shortage of first class Baldwins, Kings and Greenings, these varieties being very favourite sorts with consumers here. At the time of writing this we find a much stronger demand for apples, owing to our market being at last cleared of secondary fruit, and it is likely that high class apples will do very well for the remaining portion of this season, providing the forthcoming supplies are moderate in quantity.

'Pears.—Our experience this season with Canadian pears was quite the opposite from apples, the early arrivals of "Bartletts" coming unfortunately out of condition and losing money. Later, however, "Duchess" and "Beurre d'Anjou" pears came sound and good, and sold well and profitably, the 20-lb. package selling best.

'During the past year general trade has not been good in Scotland, but appearances at present go to show that after a term of depression signs are not wanting that we are on the threshold of more prosperous times, and with the election over, that

trade will settle down and we shall have more money amongst our apple consumers next season. When we consider the very large quantity of Canadian apples that came to Glasgow during this season, and the manner in which our market absorbed the large supply, we cannot but think it augurs well for the future of the apple business in our city.'

From Messrs. James Davidson & Co., Glasgow, dated January 19, 1910.

'Apples.—We regret to report that this season has been one of the most unpleasant and full of trouble and anxiety that we have experienced within the last few years. No doubt the trouble in the early part of the season was due to natural causes, such as fruit giving way during transit and arriving faulty and wastey, but the most serious annoyance and one which is cutting very deep into the reputation of Canadian shippers is the persistence of unfair and dishonest grading. Quite a large proportion of the apples received this season were deliberately topped and branded No. 1—fruit when, as a matter of fact, they were very poor No. 2 grade. We cannot speak too strongly against this most reprehensible and manifestly unfair practice, and would strongly urge your department to take some drastic means to severely punish packers found guilty of such dishonest methods.

'This grievance has become so common that we have scarcely a customer now who will buy apples on the strength of grade mark; they all insist on seeing them turned out. If Canadian packers were alive to their own interests they would so grade and pack their apples that a buyer here on being offered No. 1 grade could with confidence buy it as such, and until the Canadian packer realizes this he will stand to lose not only money, but both his honour and his business in this country.'

From Messrs. Mitchell & Smith, Dundee, dated March 7, 1910.

'Our experience of Canadian apples this year is that the trade is again becoming an unsatisfactory one owing to the fact that large shippers are becoming quite careless of the reputation of their brands. They are sending thousands of barrels during the season, and while some of their lots are good, others are just as bad, so that the brand and the shipper's mark is now no criterion of how they will be packed. This seems to us to arise from the fact that these large shippers are operating in different districts, and consequently packing different grades under the same mark. We think that the actual locality where the apples are grown ought to be branded on the barrels in addition to the shipper's name, as this would afford some guide as to the probable quality of the fruit.'

From Mr. T. J. Poupart, London, dated January 7, 1910.

'In reply to your letter of December 30, I beg to inform you that in my opinion the Fruit Marks Act has been very beneficial to the trade, and I certainly think that the supervision of the unloading of apples by an independent government official is to the advantage of both the shipper and salesman, as undoubtedly until the supervision of unloading was instituted some of the fruit was very badly handled at this end.'

From Messrs. Edward H. Lewis & Son, London, dated January 3, 1910.

'As regards the results of the interest taken by the Canadian Department of Agriculture to secure the safe carriage of goods, it has been of distinct advantage to all traders, whether senders on the other side or receivers here, and whether shipped on consignment or bought. My reasons for saying this are as follows: One has a government official, absolutely unbiassed, to whom the goods can be shown should there be any dissatisfaction in their arrival here, and their condition is often known to him before the merchant sees the goods, as generally the inspector has been at the dock and noted anything that may be wrong with the ship, such as goods spoilt by varying temperatures, &c.: further than this, it greatly assists people anxious to do business on a

sound and fair basis as between shippers and receivers, because we know that your Act of Parliament compels apple shippers to properly pack and grade their goods (and a most useful act too) and I personally know also that the fruit inspectors on the other side are constantly up and down the country looking for offenders against this law, as well as examining the fruit at Montreal before shipment. Of course, some may escape the vigilance of these inspectors, but even when the goods arrive here we can obtain, as it were, government evidence of their condition before they leave the dock or wharf, so that it creates, and will further create business with Canada as long as this law is enforced and fines inflicted. The combination of the Act and the inspection on your side and the supervision by the Canadian government representatives here, creates a certain confidence that your department is doing its best to encourage satisfactory business between the two parties, and I for one am very glad you have taken up this course, and we hope you will never depart from it, for if so we would be doing very little business with Canada. If we may offer a suggestion, it is that the fines for false packing are not nearly heavy enough.'

From Manchester Fruit Brokers, Ltd., Manchester, dated February 15, 1910.

'With regard to this season's 1909-10 Canadian apple trade our opinion can, we are sorry to say, be stated in a very few words. It has been a most unsatisfactory and disappointing season. The quantities were underestimated, the quality was overestimated, and the grading, especially as far as we are concerned, has been very poor.

REPORTS OF CARGO INSPECTORS IN GREAT BRITAIN.

Following are the annual reports of the cargo inspectors employed under the direction of this branch at Liverpool, Manchester, London, Glasgow and Bristol.

Report of the Chief Cargo Inspector for Great Britain. (Mr. A. W. Grindley).

Liverpool, March 31, 1910.

I have the honour to submit my report as Chief Cargo Inspector for Great Britain for the year ending March 31, 1910.

The work of the cargo inspectors stationed at the ports of Liverpool, London, Glasgow and Bristol has been carried on in a most satisfactory manner. The inspectors have furnished complete reports respecting the condition in which each cargo was landed; they have interviewed from time to time the importers of the various Canadian food products on matters affecting the trade, and during the apple season have attended as many of the sales as possible.

REPUTATION OF CANADIAN APPLES, SEASON 1909-1910.

Owing to the bulk of Canadian apples being under normal size, due to climatic causes, a large percentage of the Canadian apples have come forward stencilled No. 1 while the contents of the barrels were really No. 2, and in some cases No. 3. During the season numerous specific instances of false marking have been sent to Ottawa by the cargo inspectors and myself. It is some consolation for losses sustained by members of the fruit trade in Great Britain to see the energetic manner in which the Canadian Department of Agriculture is following up the guilty parties; and they highly approve the department's policy of publishing the names of all persons guilty of dishonest practices in the official bulletins and press, which names have been freely distributed amongst members of the fruit trade in Great Britain. As a result we find a decided improvement in the grading of Canadian apples towards the close of the season.

BACON.

In the twelve months of 1907 Canada exported to Great Britain 873,340 hundredweights of bacon, valued at £2,414,645.

In the twelve months of 1909 Canada exported to Great Britain 443,386 hundredweights of bacon, valued at £1,364,357. This great falling off may be partly due to an increase in home consumption, but there is a world's shortage which has been more especially marked in the United Kingdom, but is also very noticeable in the United States, Denmark and Canada, these being the principal bacon-curing countries in the world.

At the present time the British markets are supplied by the following classes of bacon: English, Irish, Canadian, American, Danish, Dutch, Swedish, Russian, Siberian, Mexican and Chinese.

The demand for Canadian bacon is now well established and it is a strong competitor with 'Irish,' 'Danish,' and other popular brands.

For the year 1909 the United Kingdom sent abroad £13,801,665 for bacon.

BUTTER.

The British importations of Canadian butter for the twelve months of 1909, were 22,5.2 hundredweights, compared with 43,084 hundredweights for 1908, a marked shrinkage, no doubt chiefly due to largely increased home consumption, and to a minor extent to the shipments of cream made to the United States.

The quality of Canadian butter is spoken well of by the trade, but Canadian buttermakers will be well advised to keep the percentage of water as low as possible, as the British authorities are continually drawing samples for analysis, one case having been reported by the British Board of Agriculture to the Canadian High Commissioner at London, as having over the legal 16 per cent of water.

CHEESE.

While Canadian cheese has on the whole been steadily improving, there are still numerous complaints, which when traced back are generally found to be due to the use of inferior materials or to carelessness or foolishness, or something worse, on the part of a few of the cheesemakers. During the past year I have received the following complaints:—

Defective Quality of Cotton used for bandaging cheese, which would not strip off, but had to be scraped off. Most of the retail grocers now use patent cheese cutters, and the wrappings have to be removed before the cheese can be cut. This defect was taken up by 'The Federation of Grocers' Associations' and reported to the Canadian High Commissioner, London.

Wrappings too heavy.—Several complaints. Three or four thicknesses of cotton have been wrapped around the cheese, which means a loss of weight to the retailer when the cheese are stripped.

Wrong Marking of Weights.—Complaints very numerous. Cheese have been overmarked as high as eight to twelve pounds per cheese. It gives satisfaction to the importers to know that the Dairy Commissioner has spoken so plainly to the dairymen of Canada on such a grave matter. Unless Canadians give true weights with a fair allowance for shrinkage, especially in connection with cheese shipped green, the British importers will soon find some method of solving the problem at the cost of the Canadian producers and exporters.

Cheese Shipped too Green.—Not so many complaints as in other years.

Cheese Cut and Pilfered.—Several complaints. In every case reported the cuts have been green and mouldy, showing that the damage was likely done before the cheese were shipped from Canada.

No Marks on Boxes.—Numerous complaints. As there are no marks of identification on the boxes when landed, they often are left on the hands of the shipping company concerned, which has to dispose of the cheese as best it can.

Badly Fitting Boxes.—Which result in broken boxes and often damaged cheese.

Poor Quality Wood used for making boxes, which results in a very high percentage of broken boxes.

POULTRY AND EGGS.

As far as Canada is concerned, the shipments of poultry and eggs have reached the vanishing point. A few turkeys arrived at Christmas time, which were inferior in quality to those received a few years ago.

As regards eggs, the United Kingdom for the twelve months of 1909 imported 17,710,441 long hundreds, valued at £7,235,302.

The quantity received from Canada only amounted to 3,984 long hundreds, valued at £2,182.

I take this opportunity of thanking the members of the fruit and provision trades in Great Britain, and also the officials belonging to the different shipping companies in the Canadian service, for the courtesy extended to the representatives in Great Britain of the Canadian Department of Agriculture.

Attached please find annual reports from:—

Mr. Wm. Carter, cargo inspector for ports of Liverpool and Manchester.
Mr. Thomas E. Davis, cargo inspector for port of London.
Mr. Jas. A. Findlay, cargo inspector for port of Glasgow.
Captain H. E. Shallis, cargo inspector for port of Bristol.

REPORT OF THE LIVERPOOL AND MANCHESTER CARGO INSPECTOR (MR. W. CARTER).

LIVERPOOL, March 31, 1910.

I herewith beg to submit the following report for the season of 1909-10:—

With the exception of frozen meats, shipments of Canadian agricultural produce have fallen off. Consignments of butter and eggs practically ceased, while at one period supplies of bacon were very short.

CHEESE.

The general condition of cheese landed here was far from satisfactory. There was far too large a percentage of broken and tied boxes among them. Many of these were broken before landing and had evidently been put on board in that condition. The chief cause of this is the poor quality of the boxes, and until shippers use sounder and stronger boxes, this breakage will occur. Besides breakage, there is serious risk of cut and damaged cheese when packed in frail boxes. There have not been any serious complaints *re* heated cheese, only a few lots showing sweated.

BUTTER.

There has been a great falling off in shipments of butter during the past season, only a few small consignments arriving here. All these landed in excellent order and condition.

EGGS.

There were only a few small consignments of eggs this season, and these also arrived in good condition.

FROZEN MEATS.

There has been an increase in shipments of frozen meats this season, and while the meats have been in excellent condition, the packages have landed in very poor

order. The cases have been far too frail and light for the weights placed in them, and in consequence many of them have landed broken. Shippers of frozen meats should note that all shipments arriving here now undergo a very searching and strict examination for any signs of disease or putrefaction.

BACON.

In the early part of the season shipments of bacon fell considerably, but latterly have been up to the average. With very few exceptions, bacon has landed in good order. The only time bacon boxes have been seriously damaged was when they were being hauled out of the door of a refrigerator chamber, and on calling the attention of the stevedore to this the matter was immediately remedied.

APPLES.

The present apple season has not been at all satisfactory. After early apples showing distinctly good quality, it was disappointing to find the winter varieties showing poor for quite a considerable period. Not only were many of the apples of poor quality, but a large percentage of them were over-graded. Many parcels of fruit that were branded No. 1 were hardly No. 2 quality, and many No. 2's were really No. 3 fruit. This applies to both Ontario and Nova Scotian shipments. There were many comments of the grading of apples by members of the fruit trade in the Liverpool saleroom, and the general opinion is that the Fruit Marks Act is not carried out strictly enough, and that the penalties imposed are not heavy enough.

Apart from quality, we have had a lot of more or less frozen apples this season. Since Christmas most consignments have shown more or less frost in them, and some of the last cargoes were badly frozen.

There has been no cause for complaint *re* package, nothing but good, strong barrels having been used.

There have been some complaints *re* the branding of the varieties such as R. Pippin and B. Pippin. These have been bought as Ribston or Blenheim Pippins, and on being opened were found to be Red Pippins or Blush Pippins or some other variety. I would suggest that the two former varieties should be branded as 'Ribston' and 'Blenheim,' leaving off the word Pippin. I would also suggest that packers of Nova Scotian apples should use flat hoops on their barrels instead of the present style of round ones. Flat hoops make these barrels look larger and altogether more neat.

There has been an increase in the shipments of canned apples, and all these arrived in good order and condition.

POULTRY.

There was only one small consignment of Christmas poultry and this landed in excellent condition.

THERMOGRAPHS.

These instruments were carried in nearly all ships during warm weather, and continue to give every satisfaction by the accuracy of their records.

The steamship companies are still doing all they can to improve the carrying conditions for agricultural produce, and I here wish to thank all their officials for the courtesy and assistance shown me during last year.

SESSIONAL PAPER No. 15a

REPORT OF THE LONDON CARGO INSPECTOR. (MR. THOS. E. DAVIS).

LONDON, March 31, 1910.

Herewith I beg to present my annual report for the year ending March 31, 1910.

SUMMARY OF WORK.

From the commencement of the Montreal season, May 22, 1909, to February 19, 1910, one hundred and fifteen (115) vessels have landed goods at this port, the perishables being as follows:—

From Montreal direct: 759,877 boxes of cheese, 7,084 packages of butter, 12,247 cases of bacon, 24,669 packages of apples and 1,152 cases of tender fruit, in the form of pears, peaches, &c.

Between September 19, 1909, and February 19, 1910, the imports from Nova Scotia were 214,527 packages of apples and 8,501 cheese, whilst the Canadian products which entered via St. John, N.B., Portland, Boston and New York were 48,995 boxes of cheese, 3,833 cases of bacon, 491 packages of butter and 56,860 packages of apples; the total number coming under my supervision being 1,138,236 packages.

INQUIRIES.

During the period under review I have made separate reports on the out-turn of freight from each steamer as shown in the foregoing synopsis, and in following the consignments within a reasonable area, it has been my duty to make individual calls on widely distributed consignees, the subjects dealing directly with the respective commodities landed. In addition, I have visited markets in order to obtain first hand quotations during auction sales.

CHEESE.

From personal observation coupled with the opinion of the leading London merchants, I am glad to say that heated cheese caused by bad ventilation is a thing of the past. During the season the very few signs of heated cheese showing were undoubtedly accounted for by the immature state in which the cheese was shipped. The instances of mixed curd reported prior to the passing of Clause 238a of the Inspection and Sale Act, have not been repeated.

CHEESE BOXES.

I have little to say on this heading but that which has been repeatedly discussed, beyond the fact that the breakage of *perfectly fitting* boxes is now at a minimum, especially those shipped from the port of Montreal.

BACON.

The condition and carriage of this class of goods are satisfactorily maintained.

BUTTER.

Of the few packages forwarded I can report most favourably. They gave the greatest satisfaction both as to quality and condition.

THERMOGRAPHS.

One hundred and twenty-one temperature charts were removed from instruments placed with freights; the records being mailed direct to Ottawa.

NOVA SCOTIAN APPLES.

In recent years the initial variety, Gravenstein, does not arrive in the same condition as the hardy Ribston variety, and though certainly a pretty fruit, it is heavily handicapped in being marketed at the height of the English fruit season.

PACKAGES.

The barrel is in favour as a wholesale package, but the adoption of boxes for first class varieties would, I am confident, materially benefit the grower. Anyway, this much is certain, that by boxing the apples plunder would be more easily detected than it can be now, when occasionally one has to deal with badly packed barrels.

FRUIT MARKS ACT.

I must put on record that the London and Provincial Fruit Buyers' Association much appreciate the action of the Canadian Department of Agriculture in regard to contraventions of the above Act.

THE MARKETING OF FRUIT.

After the continued efforts that have been made by the Canadian government to secure for Canadian fruit a high character on the English market, it seems to me to be very disappointing that, from time to time, apples of the best quality and in the finest condition are sacrificed at entirely unremunerative prices. Now, this is solely on account of an entire disregard of the relations between supply and demand. In December, 1908, and again during January of the present year, one witnessed a sudden and unexpected collapse of the London Auction Mart, involving not only a loss to shippers on fruit which had actually come forward, but also a reduction in the salesmen's commission. Moreover, such conditions curtail the prospect of further imports at a time when steamers are running regularly and when substantial fruit shipments are expected.

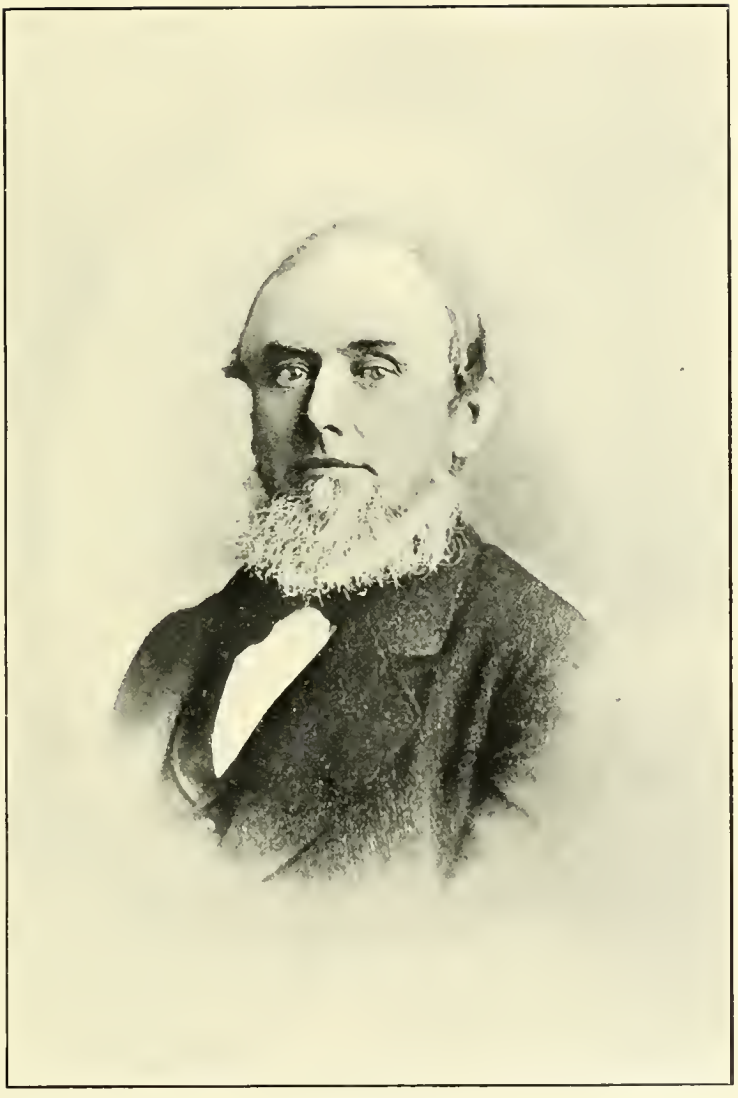
I do not presume to suggest what methods, if any, should be adopted with a view to an improvement in this connection, but it does seem to me that the necessary regulation for better distribution of the produce could be better handled by some authority independent of the parties engaged in the trade, than by any particular firm. Obviously ports like London have throughout the winter season a steady demand for fresh apples. The extent, I think, could be readily gauged on the basis of the minimum prices, and shipments could be sent forward accordingly. If some such scheme could be carried out it is more than proable that over the whole season the same quantity of fruit would pass through the markets on this side at a lighter average price, which, naturally, would be to the advantage of all concerned. This question is, I admit, a complex one, affected as it is to a large extent by arrivals from other districts, but I venture to suggest that it is worthy of some consideration. It should be borne in mind that Ontarian and Nova Scotian apples, even of No. 2 grade, are seldom sold to the consumer at less than 4 cents per pound even by the costermonger. That represents $5.52 per barrel and, of course, the higher and better qualities realize a much larger figure. After allowing for wastage and the various salesmen's profits, it will be noted that prices ranging between 5 shillings ($1.20) and 10 shillings (2.40) per barrel for the lower grades and 8 shillings ($1.92) and 14 shillings ($3.36) for the higher grades do not fairly represent the value of the fruit if the current state of the market is studied.

SHIPPING COMPANIES.

During January the department's status in respect to cargo inspection was widely acknowledged by the shipping companies and leading merchants, and authoritative letters signed by the principals were sent to the Chief of the Markets Division at Ottawa.

ACKNOWLEDGMENTS.

The courtesy and help received in former years from shipping companies and merchants continue, for which I return thanks.



C. E. CHADWICK.

The late C. E. Chadwick of Ingersoll, Ont., though never actively engaged in dairying, was, during many years of his life, one of its most ardent supporters. He was a strong advocate of the adoption of the factory system and his facile pen and eloquent voice were both effectively employed with that end in view. Mr. Chadwick was one of the prime movers in the organization of the Canadian Dairymen's Association at Ingersoll in 1867 and was elected its first President. He afterwards served as Treasurer and as Secretary for many years. Mr. Chadwick was one of the pioneers who should not be forgotten by the dairymen.

Fig. 1.—Prairie Valley, Summerland, B. C.

Fig. 2.—An Irrigated Orchard, Summerland, B. C.

SESSIONAL PAPER No. 15a

REPORT OF THE GLASGOW CARGO INSPECTOR (MR. JAS. A. FINDLAY.)

GLASGOW, March 31, 1910.

The past year's trade in agricultural produce with this port shows large increases in cheese, apples and frozen meats and a small one in canned apples; but decreases are noted in hog products, canned meats and butter, compared with last season, while egg imports have entirely disappeared. No untoward incidents marred the regular arrival of steamers this year, and while no improvements in methods of discharging steamers have to be reported, it gives me much pleasure to place on record the evident desire of the shipping companies to handle Canadian produce with great care, and the never-failing courtesy extended to me in pursuance of my duties.

CHEESE.

The season of Canadian cheese importations to Glasgow for 1909 gives reason for congratulation, as over 25,000 more boxes arrived compared with the season of 1908. The Scotch manufacture was a normal one, but owing to climatic conditions the quality was not so uniformly good as in some years. Owing to bad trade cheese moved off very slowly and difficulty was experienced in Glasgow in securing a profit off Canadian cheese. This dull spell lasted almost to the end of the year, but during the last six weeks the market has been brisk and improved prices have encouraged the shifting of much stock held up for a considerable time. It is thought an increased consumption of cheese has resulted from the high prices ruling for hog products.

Quality and condition.—Generally speaking the quality and condition of arrivals have been very satisfactory and quite in line with last season's, no recurrence of the mistaken policy of 1907, of wholesale shipping of green cheese, being in evidence. Yet the season was not without complaints of many parcels reaching here too immature, causing all kinds of trouble to importer through undue shrinkage, complaints from buyers, and allowances to be made to customers, all of which cause interruption to the even working of trade relationships and inevetably reflect on Canadian cheese and the methods of Canadian factorymen. It is evident, therefore, that improvement is still called for in this respect, which, when accomplished, will mark a decided advance in the already high estimation entertained for Canadian cheese in the Glasgow market.

I wish to emphasize this point because the continuance of shipping green cheese in the face of so much having been written and said on the matter for the last few years, betrays a disregard of the opinions of merchants here, who have to bear an undue share of the loss in shrinkage, and this ultimately will tell against the price and demand for Canadian cheese.

Some importers state they have noted an over-acidity of flavour in some arrivals this season, but generally the quality of the cheese meets with favourable comment and 'Choice Canadian' are next to the 'Finest Scotch' makes and preferred to the Scotch second rate manufactures.

Short weights.—All Glasgow importers are becoming more and more exasperated over the discrepancy between actual and marked weights, especially as they are not always successful in obtaining allowance for short weight on arrival, which amounts sometimes to as much as four or five pounds, and in several cases this season to ten pounds. It is significant that the error is always a shortage.

Boxes.—The condition of the boxes on discharge, I regret to report, shows no improvement in the aggregate. Some factories undoubtedly have made a forward step in using stronger boxes, but no general improvement from past years can be noted, and if anything the percentage of breakage this year was decidedly heavier than last, it being a common feature for factories to show from 30 to 40 per cent of broken and tied boxes. A few parcels averaged considerably higher, due largely to some one or other of the following causes: Slim boxes or brittle wood used in manufacture, too light ends and covers, and the very common complaint of irregular boxes, too wide, too

long, or too tight. The latter feature has been apparent in a few factories of Brockville district throughout the season. One of the worst offenders in this respect was the Oxford Mills Factory, with weekly shipments arriving showing cheese fitted closely to sides of box and from one to two inches over the top of the box; consequently the top of cheese was liable to be damaged from the pressure resting on the cheese and the covers frequently arrived broken or completely gone. Cheese arriving in this state required to have the boxes broken off for weighing purpose, which is a distinct disadvantage in the event of cheese having to be put into the box again for delivery to buyers. There is consequently considerable room for improvement in the boxes, Canadians comparing unfavourably with the New Zealand style of package. Canadians should have heavier and better fitting boxes, as a very bad impression is gained by observing rows of Canadian cheese in the merchants' stores here tied and coopered.

Handling.—As far as the handling during discharge from steamers at Glasgow is concerned, I am pleased to report on the evident desire of the shipping companies to handle this and similar produce with care, but I find it necessary to keep constantly in touch with the workers in the holds of steamers and the shed workers during the process of unloading, as, notwithstanding the desire of officials, the casual labourer's desire is to drop his load as expeditiously as possible without due regard for the safety of the package concerned. More care might be exercised by shippers in branding cheese boxes with brands, weights and factory marks, as I frequently observe odd boxes arriving lacking some or all of these marks.

BUTTER.

The arrivals to Glasgow for the season are of very small dimensions, again marking a decrease of over 1,000 packages from 1908. Merchants look forward to the time when Canada will be able to ship in larger quantities, but the high price of Canadian butter last year did not permit of it being imported profitably to any large extent.

Quality and condition.—The quality of the bulk of arrivals was satisfactory, most of it being choice and highly spoken of by all handling it. Canadian butter has a tendency, however, to rapidly deteriorate and develop a 'fishy' flavour. In my examinations on arrivals I observed a few parcels already off in flavour, which would lead one to believe they had been held for a time before shipment, or else the factorymen were to blame in not exercising proper care in the manufacture or in not refusing overripe milk. I also observed one case of mould on butter and several cases of mould on parchment. All shipments were carried in refrigerators and were landed here at temperatures varying from 15 to 26 degrees, usually round 19 to 22 degrees, one shipment only arriving registering 37 to 38 degrees.

The bulk of shipments were promptly lifted from the docks. Out of the total arrivals of 3,469 boxes, 1,969 were lifted on the day of discharge, 727 the day after, 681 the second day and 92 boxes the third day after. The highest temperature registered on the quay was 48 degrees for a parcel lifted the third day after unloading.

The boxes were discharged in good order, about two-thirds being sacked and little breakage apparent, a few lids only being damaged. I might point out the necessity of all boxes having plainly stencilled on them 'Canadian Produce,' as a few parcels were detained at the docks by the Customs officials till the consignees had the boxes stamped according to import regulations.

EGGS.

This was a blank season in eggs, none arriving in Glasgow from Canada. Prices ruled high most of the season and had Canada had the eggs to export, profitable business would have resulted.

BACONS AND MEATS.

There has been a large decrease of all hog imports to Glasgow during the season, compared with last, due to the decrease of hogs in Canada, and the additional requirements of a rapidly increasing population there.

Consignments arrived in good condition and gave satisfaction to all handling them, and considerably larger quantities are desired here. Owing to the existing scarcity prices have ruled high.

CANNED MEATS.

Canned meats show a continued reduction. This trade has never recovered from the scare of a few years ago; the total imports being 230 cases of jellied veal.

FROZEN MEATS.

The imports of frozen meats from Canada show a welcome growth, this season's totals reaching 17,521 boxes and 100 bags, also 50 tierces of beef udders.

The bulk of the arrivals have been of satisfactory quality, but a portion has been apparently from the carcasses of old cattle and some not of very high quality, and over the examination of which the local food inspectors have passed adverse criticisms. In view of the rigid system of inspection of 'boneless meats,' both on arrival of steamers and in the meat market, shippers would do well to be careful. I may state that two recent arrivals of beef udders were condemned by the inspectors and not allowed to be used.

CANNED APPLES.

Owing to the scarcity of United States brands, the arrivals of these show an increase. Consignments have arrived in good condition, very few damaged cases appearing, a limited few only showing leakage on arrival. The packages in some cases could stand a stronger box, but as a rule all have landed in very sound condition.

The quality has given satisfaction to the trade, a small percentage of blown or defective tins having been reported by receivers, running from 3 to 5 per cent usually.

One complaint I have received, which is worthy the attention of packers, is that of cutting the fruit too small, the presumption being that smaller or poorer grade fruit is utilized. This defect is more noticeable in the earlier cannings. Buyers prefer even size and cut.

APPLES.

This season witnesses the inauguration of a new system of selling Canadian apples in Glasgow, viz., the establishment of a central saleroom by Messrs. Simons, Jacobs & Co., Jas. Lindsay & Son, L. & H. Williams & Co., and Mr. Thos. Russell, who have jointly leased premises admirably adapted for the system, and by this means the bulk of the buyers are concentrated at one sale, whereas under the old system buyers were scattered over all the sales of the separate firms, which were carried on simultaneously. Another item which enhances Glasgow as a distributing centre for Canadian apples is the fact of the railway companies offering reduced freight rates for apples to the north and north-east coast of England, which enables buyers from these districts to patronize the Glasgow market in preference to Liverpool. A large portion of the fruit arriving here this year was bought by English buyers.

The Canadian apple trade with Glasgow has been of large dimensions, arrivals being much in excess of last season, and the crop much larger than buyers were led to believe from statistical reports.

In connection with the barrels there is still room for improvement in the branding. Several parcels still come to hand with varieties and grades pencilled only; in fact, it not infrequently happens that barrels have no brand on at all. When there

are two parcels of similar brand on the same ship for different consignees it would be an advantage to have a distinguishing counter mark, such as an initial letter or some such simple device, which would expedite delivery by the shipping companies and save extra labour to the individual consignees.

Quality.—Early season's arrivals were of good quality. The fruit was clean and sound as a rule, the pack also was of a fair standard size, though a few parcels arrived of irregular grade, and the condition was good. As a result, satisfactory prices were secured, the earlier coloured varieties returning satisfactory prices for a few weeks. With the commencement of winter varieties prices were well maintained, but it became very apparent that in some districts the apples were of small growth and in consequence the pack became more irregular, but prices for good quality continued satisfactory and shipments continued large. Towards the close of the Montreal season the grade of fruit deteriorated very considerably, and coupled with heavy shipments of Nos. 2 and 3 grade fruit, the market was unable to overtake supplies, the demand having slackened on account of the quality.

For reasons stated, prices became very low during December and the early part of January, but since then prices have continued satisfactory for good stock of Baldwins, Stark, Phœnix, Wagener, Seeks, Greenings, Manns, Fallawater, Russet, &c.

Complaints of poor grade stock have been common, but a regrettable feature has been the numerous complaints of dishonest or fraudulent packs foisted on the public; such practices eventually react upon the packers, as buyers soon get to know unreliable brands and smaller prices result. I am glad to report an improvement in pack grade from the beginning of January.

Condition.—The condition of early fruit exrefrigerators was good, but during October many arrivals came to hand overripe and poorer prices resulted. With the commencement of winter varieties conditions improved and prices also, but Spies, never too good, began to arrive in the second week of December inclined to give way and out of condition, and since then few parcels of choice Spies reached here in first class condition, later consignments showing traces of frost, some parcels being quite 'spent.' Some brands in particular continued weekly to arrive frosted and out of condition and looked to have been touched with frost before they were picked from the trees. This condition has been the source of many complaints, and disputes between brokers and retailers have resulted.

Boxes.—Large shipments of boxes of forty pounds also arrived, considerably in excess of last year's shipments, but I regret the same defect of bad packing was pronounced in the boxes also, in many cases the fruit being far below the standard desired by the market. There is a growing trade in boxes, but it can only be fostered by selecting and packing higher grade fruit than was received this season, and a more rigid system of inspection of boxed apples is necessary in order to bring Canadian boxed apples to a standard of equality with those from other countries.

NOVA SCOTIAN APPLES.

There have been considerable shipments of these apples, although prices were not so remunerative for them as last season on account of the then scarcity of Ontarian fruit. They arrived in very sound condition, but were also inclined to show irregularity of pack in certain brands.

There is an increasing demand for apples here, as this class of fruit is now looked upon more as a necessity of diet than a luxury, and increased quantities will be consumed and marketed in Glasgow by reason of improved transport facilities by shipping companies and cheaper rates offered by railway companies to consuming centres, and given well packed and honestly graded fruit, handsome prices, I am sure, will be returned to shippers provided quality and pack are satisfactory.

PEARS.

Rather over 5,000 packages of pears reached Glasgow. The earlier shipments of Bartletts in cold storage arrived sound and made good prices, but some parcels reached here overripe and were not so successful. Duchess, Anjou, Sheldon and Howell arrived with varying results in ordinary storage, Howell and Sheldon generally being overripe or approaching so, and later arrivals of Kieffers likewise came to hand overripe.

There is scope for developing the pear trade with Canada, but to be successful choice fruit had better be shipped in refrigerator at a temperature of from 34 to 36 degrees.

This season, unfortunately, was not conducive to good prices being secured, as this market was in receipt of very large arrivals from France and other centres, and pears for a time were difficult to sell.

The most suitable package is the 20-pound case. This size is more popular with the trade and the fruit carries better than in the 40-pound box, and all choice fruit should be wrapped.

Report of the Bristol Cargo Inspector (Capt. H. E. Shallis).

Bristol, March 31, 1910.

I herewith submit particulars of the work for the port of Bristol for the past year.

CHEESE.

With this produce we have exceeded our totals of last year by about 24,000 boxes, and from general observation I am of opinion that it has come along in very satisfactory condition. With regard to heated cheese, with one exception, there has been little complaint; the lot referred to arrived per ss. *Cornishman* on August 4. It was shipped and also landed here in exceptionally hot weather, also a quantity got heated in transit from the docks to Bristol. Instances of cheese having been cut and then filled in with an inferior quality of curd, and also shrinkage, have not been so noticeable, but we have had several instances of big discrepancies in the weight as marked on the boxes and the actual weight of cheese after making due allowance for shrinkage. This matter I have already brought to your notice. The old trouble with the boxes still exists and some improvement in that direction is much needed. The quantity of breakage is no greater, but it does not seem to get any less. Very few of the sewn type of box have come to hand; it is very noticeable how few of this kind are broken. Recently we had another type of box which I referred to in one of my reports, and which appeared to be very serviceable for its purpose. One great cause of so many breakages I attribute to the cheese not being put into proper sized boxes, the same being either too large or too small for the contents. One of our leading merchants attributes a lot of the shrinkage to the broken boxes. New Zealand cheese continues to make headway, but from what I can learn Canadian cheese holds its own with regard to quality, but so much coming along as it does with the packages in more or less damaged condition is a hindrance to a quick sale. This appears to be the chief cause of complaints I have had this year; otherwise the merchants have all expressed their opinion that they much approve of the condition of the cheese that has come to their respective orders.

BUTTER.

With this there has been a great falling off, though our shipments are far in excess of other ports. What has come to hand has been of good quality, The boxes, I think, would be better if more strongly put together, the grooving is so apt to come apart at any knock; and very few boxes this season have been covered, which should in all cases be done.

EGGS.

This trade seems to be quite lost, none having come to hand, which is a great pity, as Canadian eggs are much liked and well spoken of by some of the egg merchants I have conversed with.

MEATS.

Here we also have a falling off in totals, but the quality has been good and has given general satisfaction. The merchants here would like to see a large increase in this produce and are desirous of drawing the department's attention to the same.

APPLES.

We have had an increase of over 9,000 barrels over the previous year, the shipments the latter part of the year coming along in good quantities. With the exception of three or four small lots, all have been sent through to South Wales, Cardiff chiefly, which port is now doing a large business in this line. Bristol and its surroundings have been kept supplied by the apple districts near at hand, and though the supply has been large, the quality this year has not been all that could be desired, the apples being for the most part small. From personal observation and reports I have received from Cardiff, the Canadian shipments have been good, well up to grade, and fetched good prices, altogether an improvement on last year. The Canadian apple trade as far as Bristol is concerned has greatly fallen off, but there is no reason why a big trade should not be built up, as good Canadian apples are greatly in demand and make good prices.

THERMOGRAPHS AND TEMPERATURES.

Thermographs have been placed regularly on board the different ships and have all shown good results. The temperatures also have been well maintained in all the refrigerators and cooled air chambers.

During the Montreal season the Dominion Line placed the ss. *Cornishman* on the run in the place of ss. *Roman*. The former is a most serviceable ship and has capital refrigerator accommodation, which showed excellent results. The other ships in the service are the same as before. They have as usual kept up their reputation and have during the season run their refrigerators and cooled air chambers most satisfactorily and without mishap. The unloading at our docks is done as rapidly as possible; at the same time all care is taken to minimise damages. The goods are sent forward as quickly as possible on being landed. We have now with the new dock exceptional facilities for the rapid handling of all classes of cargo. I am in frequent touch with the dock and steamship officials, who are always ready to render any service in the interests of the Canadian trade, and I am much indebted to them for the same.

BUTTER TRANSPORTATION.

Fifty-eight routes in the provinces of Ontario and Quebec were covered by the special iced butter cars which were run each week from May 17 to October 16. This service was carefully supervised by this division, six inspectors being employed throughout the season in testing the temperature of the butter at country shipping points and at Toronto and Montreal and reporting to this office any irregularities in the service. The travelling inspectors made weekly reports giving the temperatures of all packages of butter which they examined, while the inspectors at Montreal made both daily and weekly reports. Each week, upon receipt of the travelling inspectors' reports, circulars were sent from this office to shippers whose butter tested higher than fifty degrees, stating the exact temperature of each lot and pointing out the importance of keeping butter at the lowest possible temperature while it is stored awaiting shipment.

SERVICE APPRECIATED BY SHIPPERS.

It is gratifying to know that the efforts of this branch in supervising the iced butter car service and endeavouring to make it as perfect as possible are appreciated by shippers. Before the present system of inspection was organized the railways did not take any special interest in the operation of the iced cars, and a very indifferent service was the result. That present conditions are more satisfactory is shown by a letter which we received on November 28, from Messrs. Hodgson Bros. & Rowson, the well known butter and cheese exporters of Montreal, in which they referred to the iced car service as follows:—

'The inspection maintained by the government at the railways on butter has resulted in a marked improvement in the condition of the butter as delivered into our warehouse from the factory. Prior to this, fully 75 per cent of our butter would come in a heated condition, although professedly brought in iced cars.'

TEMPERATURES OF QUEBEC BUTTER, 1905-1909.

The following statement shows the average temperature of creamery butter at shipping point in the province of Quebec for the five-year period from 1905 to 1909 inclusive.

TABLE No. I.—Average Temperature of Creamery Butter at Shipping Points in the Province of Quebec for Five Years, 1905 to 1909. (J. N. Lemieux, inspector.)

Name of Proprietor or Manager.	Post Office Address.	Years.				
		1909.	1908.	1907.	1906.	1905.
		Deg.	Deg.	Deg.	Deg.	Deg.
J. A. McCallum	Danville	40·2	44·9	53·8	40·1	44·2
L. L. Gale	St. Cyr	40·7	54·7	.....	.....	.....
J. L. Coté	St. Guillaume station	41·0	.....	.....	.....	50·3
C. E. Lamarche & Cie	St. Esprit (Montcalm)	41·0	57·4	.....	.....	.....
L'Ecuyer & Chaput	Ste. Elszabeth	41·8	51·1	50·7	.....	.....
P. Proulx	Ste. Agathe, Lotbinière	42·1	43·1	42·8	.....	.....
A. Michaud	Rimouski	44·0	47·5	57·0	.....	.....
Forget & Parthenais, (F. P. 1)	Ste. Anne des Plaines	44·4	47·0	50 0	49 0	.....
Wm. Parent	St. Guillaume d'Upton	44·5	.....	.....	.....	.....
Jos. Helie	St. Wenceslas	45·0	53·5	45·4	.....	.....
Gendreau & Imbeault	St. Luc de Matane	45·2	48·3	...	.. ..	.....
Rodolphe Chagnon	St. Germain de Grantham	45·4	59·0	49·0	.....	.....
C. Daudelin	St. Pie	45·5	48·0	.....	50·3	56·1
E. Lahaie	St. Guillaume	45·6	....	.....	....	56·3
E. Dumas	L'Epiphanie	45·7	45·4	47·7	55·3	.....
Alex. Lanoie	St. Marcel	46·0	...	.....	.....	.. ...
Geo. Bennett (Hazelbank)	New Glasgow	46·2	44·5	47·5	.....	.....
Cassen Bros	Kingsey	46 3	52·5	43·6	44·1	.....
Eugene Coté	Isle Verte	46·3	46·7	43·4	42·2	.....
Eugene Roy	St. Clement	46·4	50·9	50·3	..	..
Aug. Breton	L'Epiphanie	46·8	47·3	52·0	52 0	.. ..
Forget & Parthenais, (F. P. 2)	Ste. Anne des Plaines	46·8	...	.....	45·0	...
Georges Vermette	St. Agapit	46·9	51·6	53·6	.....	.... .
M. Ethier	Ste. Julienne	47·0	57·2	53·3	.....	.....
Hormisdas Laprade	St. Guillaume	47·0	...	.....	.....	.....
A. Dandonneau	St. Damien de Brandon	47·4	45·4	48·0	.....	....
A. Ravenelle	St. Pie	47·5	50·5	....	44·2	55·6
O. Mercier	St. Charles, Bellechasse	47·6	50·8	65·0	.....	... ..
J. B. Grenier	Ste. Rosalie	47·8	48·4	49·5	...	.....
Jos. Fleury	St. Leon	47·8	42·2	57·8	60·6	57·0
J. L. P. Marchand	Ste. Anne de la Perade	47 9	53·3	.....	.....	.....
E. Desrochers	Ste. Beatrice	48·0	.....	.....	.....	. .
A. A. Nicolle (N)	St. Simon de Rimouski	48·1	50·6	48·8	.....	.....
W. H. Wilson	St. Sylvestre West	48·4	47·2	49·0	....	.....

TABLE No. I.—Average Temperature of Creamery Butter at Shipping Points in the Province of Quebec for Five Years, 1905 to 1909—*Continued.*

Name of Proprietor or Manager.	Post Office Address.	Years.				
		1909.	1908.	1907.	1906.	1905.
		Deg.	Deg.	Deg.	Deg.	Deg.
L. Levesque	Cacouna	48·5	48·2	.....	.....	.....
A. Langevin	St. Pie	48·5	59·0	.....	.....	.....
A. St. Onge	Maskinonge	49·0	.....	.....	.....	.....
Jos. Gravel	St. Gabriel de Brandon	49·0	.....	.....	.....	.....
J. E. Larose	Laurentides	49·0	.....	51·3	.....	.....
Louis Roy	St. Jacques Nord	1·0	55·0	...	.....	.....
Ludger Lamothe	Clarenceville	49·1	50·8	46·3	55·5	.....
Grenon Frères	St. Barnabe, Riv. Yamaska	49·1	52·9	50·8	45·6	51·7
J. C. Rioux	Ste. Flavie Station	49·2	53·8	53·0	.....	.....
E. R. Pepin	St. Basile de Portneuf	49·2	51·5	54·4	55·8	56·0
B. Bergeron	(Shipping station) Labelle	49·2	.....	.....	.....	.....
E. Beaudry	St. Pie	49·5	56·8	.....	.....	.....
D. Pelletier	Acton Vale	49·5	51·2	54·0	.....	.....
Cyril Godbout (B)	St. Eloi	49·5	46·1	51·8	.....	.....
Eug. Godbout	"	49·6	51·6	59·0	.....	.....
W. St. Georges	St. Jean de Matha	49·8	.....	.....	.....	.....
O. Beaudry	Ste. Emelie de l'Energie	49·8	.....	.....	.....	.....
Dorius Brodeur	L'Ange Gardien	49·8	57·7	56·0	52·8	53·4
Aristide Laurier	Lachenaie	50·0	54·5	.....	.....	.....
Joseph Beaulieu	Ste. Flavie	50·0	.....	52·5	48·6	.....
Joseph Lemieux	Ste. Agathe de Lotbinière	50·0	58·3	50·3	.....	.....
L. J. Desilets	S. Sylvere	50·0	.....	.....	.....	.....
Syndicat St. Paschal	St. Paschal	50·1	49·0	51·0	.....	.....
Eugene Metivier	St. Cyrille de L'Islet	50·1	52·2	52·0	.....	.....
Cyril Godbout (I.B.R.)	Isle Verte	50·1	51·6	47·3	.....	.....
D. Legare	St. Hippolyte de Kilkenny	50·2	64·5	64·5	.....	.....
Jos. Gaudet	Ste. Marie Salomé	50·2	57·0	53·0	.....	.....
F. X. Senay	Brodeur	50·4	53·2	50·0	52·0	.....
E. Vaillancourt	St. Jean Port Joli	50·5	.....	.....	.....	.....
Joseph Houle	St. Jean de Martha	50·5	.....	.....	.....	.....
Charles Harvey	Amqui	50·5	.....	50·0	.....	.....
Joseph Charette	St. Zénon	50·7	.....	.....	.....	.....
J. A. Saindon	St. Arséne	50·7	47·5	52·0	50·3	.....
O Bernier	Laurentides	50·8	.....	50 6	53·0	.....
François Roy	Mont Carmel	50·8	45·1	56·0	.....	.....
Syndicat d'Upton	Upton	51·0	53·5	54·5	.....	.....
F. Rondeau	Ste. Emile de L'Energie	51·0	.....	.....	.....	.....
François Robitaille	St. Damien de Brandon	51·0	55·8	54·5	.....	.....
Phileas Lavalle	St. Gabriel de Brandon	51·0	50·0	51·5	.....	.....
V. Gerry	Ste. Cecile de Milton	51·0	62 0	.....	.....	.....
A. Deragon	St. Valérien	51·0	58·0	.....	53 8	.....
A. Gratton	Laurentides	51·0	.....	.....	.....	.....
Joseph Deroches	Ste. Beatrice	51·0	.....	53·0	.....	.....
P. Gauthier	St. Luc de Matane	51.1	49·0	44·0	.....	.....
L. A. Boucher	L'Islet	51·1	51·0	54·5	.....	.....
Nazaire Demers	St. Giles	51·2	53·8	55·6	.....	.....
A. Fraser	Matane	51·2	48·0	50·0	.....	.....
Arcade Coupal	Henryville	51·3	49·3	51·6	.....	51·7
D. Kerouack	St. Narcisse	51·4	53 3	51·5	.....	.....
E. Marchand	St. Joseph de Nicolet	51·5	57·5	53 0	.....	.....
S. Comtois	St. Damien de Brandon	51·5	43·7	52·5	.....	.....
H. Guilbault	Vaucluse	51·6	.....	.....	54·3	.....
Montreal Dairy Co	Montreal	51·6	.....	.....	.....	.....
A. Fortin	St. Paul de la Croix	51·6	.....	52·3	.....	.....
F. Provost	Acton Vale	51·8	59·3	56·9	.....	.....
J. A. Bourbonnais	Pont Chateau	51·8	.....	.....	.....	.....
Camille Bernier	Cap St. Ignace	51·9	58·0	.....	.....	.....
Geo. Bennett (Elm Bank)	New Glasgow	52·0	47·0	48·3	.....	.....
Philibert Plante	St. Joseph de Lepage	52·0	55·6	.....	53·6	.....
D. Guilbault	St. Gabriel de Brandon	52·0	45·3	54·3	.....	.....
Joseph Dufresne	" "	52·0	.....	.....	.....	.....
E. Desrochers	St. Charles de Mandeville	52·0	.....	52 0	.....	.....
Dr. P. Dube	St. Sylvestre East	52 1	51·0	56·5	.....	.....

TABLE No. I.—Average Temperature of Creamery Butter at Shipping Points in the Province of Quebec for Five Years, 1905 to 1909—*Continued.*

Name of Proprietor or Manager.	Post Office Address.	Years.				
		1909.	1908.	1907.	1906.	1905.
		Deg.	Deg.	Deg.	Deg.	Deg.
J. B. Anetil	Cedar Hall	52·1	.....	.....	...	....
H. Leroux	St Georges (Montcalm)	52·1	52·6	51·0	.....	.....
Alphonse Mercier	St. Patrice	82·2	49·2	49·8	.....	.....
A. A. Nicolle (2)	St. Simon	52·2	48·2	46·6	.....	.....
Gilbert Brunette	St. Liboire	52·2	60·0	53·5	.....	.....
N. Gadoury	St. Jean de Matha	52·2	.....	.....	...	.....
A. W. Cyr	Ste. Anne de la Perade	52·3	60·6	.....	.. ..	.....
Israel Dion	La Chapelle	52·4	46·3	52·5	.....	.....
A. Desrosiers	Ste. Beatrice	52·5	58·0	.....	.....	.....
Sam Pellerin	Kildare	52·5	54·3	55·0	.....	.....
P. Langlais	Ste. Angele de Merici	52·6	.....	57·0	53·3	.....
Cyril Godbout (C.G.)	St. Eloi	52·7	53·1	.. ..	.....	.....
G. Couture	St. Anaclet	52·7	55·0	54·0	.....	.....
Hubert Morin	Buckland	52·7	62·0	58·0	. .	. . .
A. Tremblay	St. Aubert	52·7	57·7	....	.....	.....
Aug. Boucher	St. Cléophas de Brandon	52·7	.....	.....	.....	.....
Joseph Rocheleau	St. Didace	52·7	56·1	61·5	.....	.....
A. Drouin	Ste. Sophie de Lacorne	52·7	59·0	51·8	.....	.....
Alex. Robillard	St. Jean de Matha	52·8	.....	.....	.....	.....
J. A. Roy	St. Jean de Matha	52·8	.....	.....	54·0	.....
Horace Brunelle	Upton	52·8	56·7	56·4	.....	.....
J. Chamberland	Sandy Bay	52·8	51·5	51·0	...	. ..
Alfred Belzil	St. Mathieu	52·9	53·3	54·0	...	.....
Couture & frère	St. Sebastien	53·0	56·4	52·8	.....	.....
Jos. Brasseur	Egypte	53·0	54·7	56·0	.....	.....
F. Thibault	L'Islet Station	53·0	54·5	54·0	.....	.....
J. B. Thériault	St. Modeste	53·1	52·2	50·3	54·6	.....
Telesphore St. George	Kildare	53·1	54·2	51·0	53·6	.....
C. Marsan	St. Liboire	53·2	57·2	.....	... ..	.....
J. B. St. Pierre	St. Hippolyte de Kilkenny	53·2	62·7	68·0	.....	.....
Moise Boucher	Ste. Mélanie	53·3	52·5	56·5	60·0	.....
W. Girard	Acton Vale	53·4	57·0	59·0	....	....
Cyril Godbout (R. 18)	Isle Verte	53·5	55·6	50·3	... ..	....
A. Lafond	St. Didace	53·5	59·5	.....	.....	.....
Wm. Parent	Cavignac	53·5	.....	.....	.....	.....
Sweet Milk Condensing Co.	Laurentides	53·5	59·6	60·3	.....	52·9
Jos. Mirault	St. Come	53·5	54·5	.....	.....	.....
J. P. Thériault	St. Alphonse (Joliette)	53·5	55·0	55·0	.....	. ..
H. Provost	L'Epiphanie	53·6	60·0	55·0	.....	.. .
J. H. Vadnais	L'Ange Gardien	53·7	57·7	50·0	48·2	50·1
Henri Lecompte	St. Theodore d'Acton	53·8	59·6	54·3	.....	.....
R. Vincent	St. Alexis (Montcalm)	53·8	.....	.....	.....	.....
J. N. O. Fournier	St. Magloire de Buckland	54·0	59·6	56·0	.....	.....
A. Jeannelle	St. Germain de Grantham	54·0	60·0	.....	.....	.....
A. Champagne	Ste. Emelie de L'Energie	54·0	.....	.....	.....	.....
Syndicat St. Roch	St. Roch L'Achigan	54·0	57·0	.....	.....	.. ..
A. Gremer	Joliette	54·0	47·0	.....	... ..	.....
A. N. Beaudry	St. Zenon	54·1	.....	.....	....	...
A. Lussier	Ste. Helene de Bagot	54·2	58·8	54·0	.....	.....
O. Roberge	St. Felix de Valois	54·2	....	...	61·3	.....
E. Paquet	St. Theodore d'Acton	54·2	58·4	57·0	.....	.....
John April	Chemin Taché	54·3	55·1	52 3	.....	.....
Rev. M. Carmel	St. Cyprien	54·3	53·6	59·0	.....	.....
P. Keronack	St. Eugene de L'Islet	54·3	59·0	58·5	.....	.....
J. R. Coutu	St. Gabriel de Brandon	54·3	57·8	55 3	58·6	.....
Mark Macduff	Upton	54·4	57·6	54·0	...	.... .
J. Ludger Rioux	Trois Pistoles	54·4	52·1	50·7	.....	... ..
Lucien Belanger	St. Damien de Buckland	54·4	55·1	59·0	.....	.....
Laporte & frère	Kildare	54·4	....	52·4	56·6	.....
R. Chagnon (10e Rang)	St. Germain de Grantham	54·5	57·3	.....	.. . ..	.....
N. Rocheleau	St. Gabriel de Brandon	54·5	.....	.....	.....	.....
A. Lapalme (Prairie ?)	St. Hugues	54·5	56·0	52·0	55.0	.....

TABLE No. 1.—Average Temperature of Creamery Butter at Shipping Points in the Province of Quebec for Five Years, 1905 to 1909—*Continued.*

Name of Proprietor or Manager.	Post Office Address.	Years.				
		1909.	1908.	1907.	1906.	1905.
		Deg.	Deg.	Deg.	Deg.	Deg.
N. Tetreault	St. Hugues	54·5	59·0	59·5	53·6	.....
James Miller	Ulverton	54·5	61·0	53·0	.....	.....
C. E. Duquette	St. Hyacinthe	54·5	58·5	.....	.....	63·0
Geo. Roy	Montmagny	54·6	53·7	53·0	.....	....
Aug. Robillard	St. Jean de Matha	54·6	.....	.....	.....	.....
Frs. Morin	Morin	54·7	56·6	.....	.....	.....
A. Gaudreau	L'Islet	54·7	61·2	55·5	.....	.....
A. Olivier	St. Norbert	54·7	56·0	54·5	.....	.....
A. Lapalme (Prairie ⅔)	St. Hugues	54·7	48·0	50·0	.....	.....
Auguste Pelletier	St. Roch des Aulnaies	54·8	58·5	60·0	.....	.....
Wilfrid St. Onge	Mont Johnson	54·8	53·2	54·3	.....	53·2
Marceau & Corriveau	St. Valier	55·0	60·0	55·5	.....	.....
John Belanger	Green River	55·0	.....	.....	.....	.....
Nap. Dufresne	St. Helene de Bagot	55·0	60·5	....	.....	.....
Charles Gravel	L'Assomption	55·0	61·3	58·2	.....	.....
L. Laeasse	Ste. Lucie	55·0	57·2	.....	.....	.....
J. P. Rocheleau	Pauline	55·0	.....	.....	.....	.....
C. Vadnais	St. Marcel	55·0	59·0	.....	.....	.....
H. Lafrance	St. Joseph du Lac	55·0	58·3	55·3	52·8	.....
J. A. Ratté	St. Pierre, Rivière du Sud	55·1	57·4	57·0	.....	.....
J. Lachapelle	St. Jacques L'Achigan	55·1	.....	53·5	.....	.....
Eustache Menard	L'Anse à Giles	55·1	62·5	60·0	....	.....
O. Gelinas	St. Elie	55·2	51·0	53·8	67·6	.....
W. Landreville	St. Jean de Matha	55·2	.....	.....	.....	.....
O. W. Seguin	St. Polycarpe Junction	55·3	.....	.....	.....	.....
Ed. Belanger	Cap St. Ignace	55·3	58·7	58·0	.....	.....
J. D. Blanchette	St. Roch des Aulnaies	55·3	58·9	56·0	.....	.....
L. P. Paradis	St. Raphael	55·4	58·6	55·8	.....	.....
Henri Lessard	St. Leon	55·4	54·6	51·5	.....	.....
Israel Thouin	Ste. Lucie	55·5	60·1	62·3	.....	.....
O. Archambault	St Paul L'Ermite	55·5	.....	.....	.....	.....
L. Cie de Laiterie	St. Pierre, Rivière du Sud	55·5	59·5	....	.....	.....
Eugene Gourgue	St. Paul du Buton	55·5	.....	.....	.....	.....
W. Ferron	St. Leon	55·6	54·6	52·7	....	.....
J. A. Massicotte	Ste. Melanie	55·8	.....	44·0	.....	.....
P. Dumas	St. François Montmagny	56·0	.....	.....	.....	.....
W. Proulx	St. Magloire de Buckland	56·0	.....	.....	.....	.....
L. Menard	St. Lazare Station	56·0	....	....	.....	.....
Felix Brumeau	St. Felix de Valois	56·0	.....	....	....	.....
O. Desmarais	St. Felix de Valois	56·0	.....	.....	.....	.....
X. Brault	St. Felix de Valois	56·0	.....	.....	60·3	.....
Laporte & Comtois	Ste. Emelie	56·0	....	.....	.....	.....
Jos. St. Pierre	Ste. Rosalie	56·0	59·0	52·0	.....	.....
J. A. Bourbonnais	St. Polycarpe	56·0	.....	.....	.....	.....
L. Lecompte	St. François Montmagny	56·1	57·2	61·0	.....	.....
Theophile Lizotte	Ste. Louise	56·1	58·5	.....	.....	.....
Delphis Tetreault	Upton	56·2	58·2	52·5	.....	.....
J. O. Goyette	St. Liboire	56·2	56·6	.....	.....	.....
J. Dumas	St. Jean de Dieu	56·2	54·3	54·0	.....	.....
J. Dupuis	St. Michel de Bellechasse	56·2	....	.....	.....	.....
J. N. Nadeau	Notre Dame du Lac	56·2	.....	.....	.....	.....
Fred Caron	St. Jean Port Joli	56·2	58·0	58·0	.....	.....
J. B. St. Pierre	St. Philippe de Neri	56·3	59·7	58·0	.....	.....
Aurele Leclerc	St. Eugene de Grantham	56·3	59·5	53·3	.....	.....
Ed. Jean	St. Fabien	56·3	53·6	53·3	.....	.....
A. Lecompte	St. Pierre, Rivière du Sud	56·3	.....	.....	.....	.....
Jos. Tremblay	Ste. Felicite	56·4	55·8	55·5	.....	.....
E. Ringuette & F	St. Nazaire d'Acton	56·4	60·8	47·0	.....	.....
C. Joly	Ste. Emelie de L'Energie	56·5	....	.....	.....	.....
D. Lorrain	St. Janvier	56·5	61·5	58·0	.....	.....
Wm. Houle	St. Claude	56·5	56·6	.....	.....	.....
E. Cassavant	Abbotsford	56·5	60·0	.....	.....	.....

SESSIONAL PAPER No. 15a

TABLE No. 1.—Average Temperature of Creamery Butter at Shipping Points in the Province of Quebec for Five Years, 1905 to 1909—*Continued.*

Name of Proprietor or Manager.	Post Office Address.	Years.				
		1909.	1908.	1907.	1906.	1905.
		Deg.	Deg.	Deg.	Deg.	Deg.
Jos. Lemonde	St. Liboire	56·5	59 1	53·8		
J. Blanchette	Ste. Anne de la Pocatière	56·6	59 5			
J. B. Lanthier	St. Jerome	56·6	58·3			
P. Savoie	St. Nazaire d'Acton	56·7	62 6	51·5		
J. G. Heroux	Terrebonne	56·7		59 5		
O. E. Dallaire	St. Hyacinthe	56·7				
Isidore Jodoin	St. Theodore d'Acton	56·7	53 2	54 5		
Lacasse & Blanchet	St. Gervais	56·8	59·6			
Arthur Bazinet	Ste. Emelie de l'Energie	56·8				
Ed. Frechette	St Felix de Valois	56·8				
Ludger Pelletin	Stanfold	57·0	58·3			
N. Lussier	Acton Vale	57·0	57 5	56·4		
A. S. Deslandes	St. Valerien	57 0	54·6	57·0		
H. Blanchard	St. Hyacinthe	57 0		61·0		
Nere Morin	Ste. Helene de Kamouraska	57·0				
O. Ratelle	St. Paul de Joliette	57·0	55·3	59·0		
J. L. Letourneau	Shipping Station-Labelle	57 0				
Albert Houle	St. Simon de Yamaska	57 0	61·2	50·2	55·0	
George Bennett (Green Bank)	New Glasgow	57·0	60·0	57·0		
Andre Brasseur	Ste. Christine	57·1				
Az. Deslauriers fils	St. Dominique de Bagot	57·2	59·8			
Joseph Guertin	St. Liboire	57·2	59·4	65·0		
A. Provost	St. Nazaire d'Acton	57·2	60·2	52·7		
Victor Houle	Ste. Helene de Bagot	57 2	60·8	51·2		
Joseph Meunier	St. Sebastien	57·3	61·8			
A. Richer	Emileville	57·4	62·0	53·5		
Denis Lariviere	Ste. Marie de Blandford	57·5	57·5			
Pacifique Houle	Duncan	57·5	60·4	49·0		
Ed. Brosseau (E.B. 8)	St. Sauveur des Monts	57·5	59·0	59·3	62 3	
M. Brault	Montcalm	57·5	52·0	50·5		
W. Vezina	Cap Sante	57·6	66·2	59·3		
J. F. Tondreau	Montmagny	57·6				
S. Ducharme	St. Cleophas de Brandon	57·7				
A. Gazaille	St. Dominique de Bagot	57·7	60·0		53·2	
O. Chagnon	St. Valerien	57·8	58·8			
John Albert	Albertine, N.B	58·0				
H. Charland	St. Simon de Yamaska	58·0	58·8	52·7	53 7	
I. Dessert	St. Enstache	58 0	58·5			
Ls. Archambault	St. Basile Portneuf	58·1	54·5	57·6	55·5	
P. H. Gareau	St. Polycarpe	58·2				
L. E. Cote	Montmagny	58·2	59·5	61·0		
W. Gareau	St. Jerome	58·3	46·9	50·5	50 0	
A. Chagnon	St. Dominique de Bagot	58·5	63·0			
C. Messier	Ste. Helene de Bagot	58·5	63·3	47·0		
L. J. A. Menard	St. Michel des Saints	58·5				57·6
A. J. Desroches	St. Felix de Valois	58·5				
H. Lacasse	Ste. Lucie	58·5	59·3	64·3		
E. Beauregard	Rawdon	58·5	57·0			
H. Bergeron	St. Paulin	58·6	56·0	51·5	66·3	
L. Z. A. Robillard	St. Esprit	58·6	61·6	56·5		
M. E. Tremblay	Clarenceville	58·6	58·5	55·0	56·0	59.3
O. Bellehumeur	St. Eugene de Grantham	59·0	58·0	54·0		
J. Gourre	L'Epiphanie	59 0	61·5	54·0		
Alb. Lapointe	St. Paul d' Industrie	59·1	55·0	52·0		
Louis Nadeau	Sabrevois	59 2				
Az. Brien	St. Roch L'Achigan	59·2				
Wilfrid Boucher	St. Barnabe (St. Maurice)	59·3	61 1			
J. O. Denis	St. Lazare Village	59·5				
H. Mailhiot	Ste. Gertrude	59·5	61 0	50·0		
Nap. Dion	St. Canut	59·5	59·7	57·8		
Alp. Lanthier	New Glasgow	59·5	58·5			
Naz. Heroux	St. Barnabe (St. Maurice)	59·6	59·3			

TABLE No. I.—Average Temperature of Creamery Butter at Shipping Points in the Province of Quebec for Five Years, 1905 to 1909—*Continued.*

Name of Proprietor or Manager.	Post Office Address.	Years.				
		1909	1908	1907	1906	1905
		Deg.	Deg.	Deg.	Deg.	Deg.
J. A. Allaire	St. Roch L'Achigan	59·6	62·8	56·0	.....	.....
W. Lamy	St. Leon	59·6	53 0	.....	.....	.....
Jos. Roy	St. Valier	59·7	60·0	.....	.....	.....
A. Brunet	Riviere Gagnon	59·7	54·7	.....	.....	.....
U. Benoit	Portneuf	60·0	....	.....	.....	.....
John Burns	St. Theodore de Chertsey	60·0	55·7	... ..	.....	.....
Esdras Bellemare	Maskinonge	60·2	.. .	.. ..	67·3	.....
P. Allard	St. Alexis des Monts	60·2	60·0	51·5	66 3	.....
O. Gendron	Yamachiche	60·4	64 2	65·2	.....	.....
H. Bourassa	Yamachiche	60·5	68·5	.....	.....	.....
P. Mailloux	St. Michel de Rougemont	60·5	63·0	50·0	51·6	53·6
Alexis Soucy	Ste. Rose du Degele	61·0	.....	.....	.....	.....
Boisvert & Bussiere	Caxton	61·0	63·0	59·5	.....	... ..
Omer Gelinas	St. Barnabe (St. Maurice)	61·0	57·6	.. ..	.....	.....
C. Laviolette	St. Esprit	61·0	57·2	.....	.....	.....
H. Lapalme	St. Paul d'Abbotsford	61·2	63·7	52·0	51·4	62·0
Eucher Roy	Ste. Elizabeth	61·3	58·3	54·4	.....	.....
F. Cinq-Mars	St. Pierre les Becquets	61·3	.....	.....	.....	.....
J. E. Grenier	Hunterstown	61·4	62·6	.....	.....	.....
Fr. Thibault	St. Barnabe (St. Maurice)	61·4	.....	.....	.....	.....
Malo Lapalme	St. Basile le Grand	61 5	.....	.....	.....	.....
H. Leclerc	Pont de la Noreau	61·5	62·5	49·4	57·1	....
C. Robinson	Mascouche	61·5	65·5	68·0	.....	.....
J. W. Kimpton	Shawbridge	61·5	59·5	59·3	63·0	.....
E. Thinelle	St. Calixte	61·5	62·0	58·0	.....	... .
E. Lanthier	St. Augustin	62·0	55·2	51·2	56·4	.....
C. Forget	St. Liguori	62·0	58·0	.....	.....	.....
T. Lacerte	St. Severe	62·2	63·6	61·5	.....	.....
J. E. Binet	St. Eustache	62·3	54·0	.....	58·3	.....
A. Paquin	St. Boniface	62·3	.....	68·0	.....	.....
Art. Morissette	St. Pierre les Becquets	62·3	.....	.....	.....	.....
A. Lapointe	Montcalm	62·6	55·0	.....	.....	.....
E. Brosseau (E.B. 1)	St Sauveur des Monts	62·7	59 3	63·5	.....	.....
Geo. Beausoleil	St. Alexis (Montcalm)	62·7	58 2	55·3	.....	.....
U. Perrault	St. Judes	62·7	63·5	46·5	.....	.....
L. Robert	Yamachiche	63·0	... ..	.....	.. ...	.....
Z. Gauthier	Mascouche	63·0	57·0	57·0	.....	.. ...
Jos. Lamarche	L'Epiphanie	63·0	.....	.....	.....	. ...
J. G. Hamelin	St. Polycarpe	63·5	.....	.....	.....	.....
Mathias Brosseau	Piedmont	63·5	62·0	.....	.....	.....
Jos. Tremblay	Petit Matane	63·6	.....	....	.....	.....
P. Lebuis	Grande Freniére	63·6	61·0	.....	.....	.....
G. Belanger	St. Sauveur des Monts	64·0	63·0	65·3	.....	.....
A. Bastien	St. Jerome	66·0	.....	.....	.....	.....
Louis Rebeau	St. Paul L'Ermite	66·0	59·0	.....	.....	.....
Ed. Brosseau (E.B. 4)	St. Sauveur des Monts	67·0	63·3	66·3	.....	.....
A. Davis	Christieville	67·0	60·6	59·0	.....	.....
Ed. Brosseau (E.B. 5)	St. Sauveur des Monts	69·0	64·3	66·0	.....	.....

SESSIONAL PAPER No. 15a

TABLE No. II.—Average Temperature of Creamery Butter at Shipping Points in the Province of Quebec for Five Years, 1905 to 1909. (F. A. Knowlton, inspector.)

Name of Proprietor or Manager.	Post Office Address.	Years.				
		1909.	1908.	1907.	1906.	1905.
		Deg.	Deg.	Deg.	Deg.	Deg.
T. W. Dunn	Cowansville	39·3	.....	48·0	50·1	54·3
S. J. Kathan	West Brome	42·0	.....	48·0	.....	.....
A. Converse	Ways Mills	43·5	....	45·8	44·9	48·3
A. H. Bouchard	Eastman	44·0	41·0	50·0	44·1	51·1
L. Vanchestagne	Napierville	45·0	60·0	.....	52·7	.....
Gilbert & Bureau	Compton	45·0	57·4	49·6	.....	.....
A. A. Hodge	Sawyerville	45·0	43·3	43·0	47·3	52·2
Guy Griggs	Mansonville	45·0	46·5	48·5	51·2	52·7
Jos. Labelle	Vale Perkins	45·2	45·5	47·9	51·2	52·5
Olmsted & Boright	Sutton	45·5	.....	.....	.....	.....
L. Ladouceur	St. Edwidge	46·0	51·8	39·5	.....	....
Alex. Lemaire	White's Station	46·0	.....	.....	.....	.....
J. Darby	Ormstown	46·0	.....	.....	.....	.....
A. Gerin	Coaticook	46·6	49·4	48·1	48·8	50·2
S. Bachand	"	46·6	55·0	36·6	.....	.....
H. R. Standish	Magog	46·9	47·3	45·5	48·0	47·3
O. Ratte	Cherry River	47·0	51·1	48·5	48.5	.....
H. J. Lee	Sutton	47·0	.....	.....	.....	.....
J. J. Vanasse	Wickham West	47·0	53·1	56·8	52·9	.....
J. A. Lapierre	Bromptonville	47·5	42·0	.....	.....	52·1
W. S. Purdy	South Stukely	47·5	56·4	.....	54·3	.....
E. H. Hunter	Stanbridge East	47·6	50·9	43·5	.....	.....
John McCrum	Iron Hill	47·9	49·2	45·5	43·9	43·3
Juaire & Dussault	Knowlton	48·1	48·5	46·2	49·8	47·1
Berard Frères	Dunham	48·4	50·0	47·5	.....	47·8
M. Curley	"	48·4	57·4	.....	.....	.....
B. Ryders	Fitch Bay	48·5	48·8	46·7	51·5	49·0
E. Theriault	Côte St. Joseph	48·5	53·6	.....	.....	.....
W. H. Stewart	Frontier	48·6	58·5	.....	51·0	49·2
J. W. McKay	North Hatley	48·8	52·8	46·3	43·7	48·1
J. L'Heureux	Kate Vale	49·0	54·2	50·5	51·8	56·3
W. W. Reed	North Hatley	49·0	.....	41·9	43·2	47·5
Lapierre Frères	Laroche	49·0	50·0	46·8	49·4	52·9
Rev. Tremblay	St. Hermenegilde	49·0	53·1	41·5	45·3	47·4
Stewart & Fournier	Hemmingford	49·0	60·0	45·3	50·8	56·6
E. A. Baldwin	Stanstead	49·4	.....	.....	.....	.....
Griffin Creamery Association	Griffin (Stanstead)	49·5	.....	.....	.....	.....
H. J. Allen	West Shefford	49·5	50·2	46·6	47·7	47·1
A. Laubier	St. Evariste	50·0	51·3	51·7	.....	.....
J. A. Vinet	St. Remi	50·0	55·5	53·5	48·3	49·4
A. E. Fish	Ayers Cliff	50·2	.....	49·4	48·0	51·0
J. L. Poupart	St. Remi	50·5	55·0	50·0	55·6	58·0
J. Carson	Geraldine	50·5	.....	.....	.....	.....
G. A. Robb	Warden	50·5	48·6	50·0	51·5	51·7
O. Lacombe	St. Evariste	50·6	51·3	52·0	.....	.....
E. Berard	Johnville (Compton)	50·6	.....	.....	.....	.....
Henry Purdy	Melboro	51·0	47·5	48·8	48·5	.....
B. Converse	Barnston Corner	51·4	50·9	48·2	49·5	53·6
W. Winter (Aberdeen 1)	Ormstown	52·0	.....	.....	.....	.....
W. K. Baldwin	Baldwin's Mills	52·5	54·0	43·6	.....	.....
S. Leduc	Haseville	52·6	55·0	.....	.....	.....
W. Lacasse (W. L.)	St. Etienne de Bolton	52·9	52·3	52·0	.....	.....
Oct. Roy (R. 3)	St. Ephrem de Tring	53·0	57·3	49·1	.....	.....
H. Leduc	North Stanbridge	53·2	54·5	51·3	.....	.....
Joseph Beaudin	Franklin Centre	53·2	42·5	48·0	47·2	51·2
W. Lacasse (H. 241)	St. Etienne de Bolton	53·5	.....	.....	51·2	.....
Morrison & Bowen	Hatley East	54·0	52·0	50·5	50·0	52·1
W. Winter (Aberdeen 2)	Ormstown	54·0	.....	.....	.....	.....
A. A. Ayer	Freligbsburg	54·0	51·0	52·8	....	.....
E. Poirier	St. Michel de Napierville	54·0	60·0	52·3	.....	.....
E. Normand	Kingscroft	54·2	.....	47·5	44·2	48·3
Noel Masse	St. Ephrem de Tring	54·6	56·9	54·8	.....	.....
E. Bonneau	North Stanbridge	54·6	51·7	.....	.....	.....

TABLE No. II.—Average Temperature of Creamery Butter at Shipping Points in the Province of Quebec for Five Years, 1905 to 1909—*Continued.*

Name of Proprietor or Manager.	Post Office Address.	Years.				
		1909.	1908.	1907.	1906.	1905.
		Deg.	Deg.	Deg.	Deg.	Deg.
Oliver & Goldie	Rockburn	55·0	50·5	.....	.....	47·3
J. E. Dion	St. Evariste	55·3	64·0	50·6	.....	.....
Oct. Roy (12 C)	St. Ephrem de Tring	55·3	56·7	54·8	.....	.....
J. L. Poupart	St. Isidore	55·5	.....	.....	53·0	61·3
Oct. Roy (L. P. 27)	St. Ephrem de Tring	56·0	55·7	56·3	.....	.....
Raboin & Raboin	Compton	56·2	53·6	49·8	42·6	43·3
Fred. L. Fall	Huntingdon	58 0	43·3	.....	56·6	49·3
Fredette & Painchaud	Sherrington	62·0	57·4	52·3	52·6	55·0
S. Raboin	St. Edwidge	65·5	51·8	51·4	.....	.....

On October 14, the following circular was sent to all the names in tables 1 and 2, and it is encouraging to note that as a result a considerable number of creamery owners applied to this branch for plans and specifications and that during the past winter they built modern cold storage rooms in their creameries.

DOMINION DEPARTMENT OF AGRICULTURE—BRANCH OF THE DAIRY AND COLD STORAGE COMMISSIONER.

OTTAWA, October 14, 1909.

DEAR SIR,—You are no doubt aware that for several years past this department has arranged with the different railway companies for a special weekly iced car service for the carriage of butter to Montreal during the period of warm weather. Inspectors have been employed by the department to travel with these cars so as to ensure a proper service, and to take notes of the temperatures of the butter as shipped at the various railway stations.

In looking over the average temperatures for each creamery for five years past, we find in quite a number of cases that the temperature of the butter at the shipping point has been lower each succeeding year. This gratifying state of affairs is the result of the construction of new cold storage rooms, the improvement of old ones and of more care in the management of the cold storages generally.

We regret to find, however, that many of the creameries have made no progress, and some of them have been retrograded in this important matter of the storage of their butter. In this connection we wish to impress upon you the fact that the refrigerator cars are not for the purpose of cooling warm butter, but that they are intended to carry to its destination, in good condition, butter that is at a proper temperature when loaded in the cars.

At the close of the season every creamery manager should carefully overhaul his cold storage and see that everything is put in good shape. The walls should be carefully washed, then dried and whitewashed. The washing will be more effective if it is done with a solution consisting of one part of bi-chloride of mercury to 1,000 parts of water, because such treatment will effectully destroy all mould or spores of mould and thus lessen the danger of having mouldy butter, and at the same time prevent decay in the structure of the cold storage.

Then it is important to see that a good supply of ice is stored this winter. By keeping and shipping your butter at a low temperature, you will derive both satisfaction and profit, besides enhancing the general reputation of Canadian butter.

SESSIONAL PAPER No. 15a

Below you will find the average temperatures of the packages of butter from your creamery that have been tested by our inspector in the years named.

(Year)	1909.	1908.	1907.	1906.	1905.	
Temp.	....	....	....	....	....	degrees.

For full details of refrigerator car services, temperatures of butter at different points, &c., see the report of the Dairy and Cold Storage Commissioner just issued, which will be sent to any person on application to the undersigned.

Any creamery which has not already done so may secure a bonus of $100 by erecting a cold storage according to plans and specifications supplied free of cost on application to this office.

W. W. MOORE.
Chief, Markets Division.

J. A. RUDDICK,
Commissioner.

TABLE No. III.—Average Temperature of Creamery Butter at Shipping Points in the Province of Ontario, Season 1909.

(H. G. Shufelt, Inspector.)

Proprietor or Manager.	Post Office Address.	Shipping Station.	Railway.	Number of Packages Tested.	Average Temperature.
					Deg.
J. Wilson	Fergus	Fergus	G.T.R.	5	47·8
F. A. Keyes	Bluevale	Bluevale	"	11	48·1
L. O. Jackson	Mitchell	Mitchell	"	4	48·5
H. O. Henderson	Whitechurch	Whitechurch	"	5	49·2
A. G. Calder	Winthrop	Seaforth	"	14	49·8
John Irving	Milton	Milton	C.P.R.	6	49·8
J. J. Wincel	Neaustadt	Neaustadt	G.T.R.	6	49·8
W. G. Medd	Winchelsea	Exeter	"	13	50·4
S. H. Scott	Exeter	"	"	7	50·7
W. Waddell	Kerwood	Kerwood	"	4	51·0
W. Parker	Merlin	Merlin	P.M.R.	6	51·0
McInnis & Co	Tiverton	Kincardine	G.T.R.	3	51·7
A. E. Ord	"	"	"	11	52·0
H. E. Wilson	Keyser	Kerwood	"	2	52·5
Underwood Butter and Cheese Co.	Underwood	Port Elgin	"	5	52·8
J. H. Graham	Elmvale	Elmvale	"	6	53·5
Paisley Creamery Co	Paisley	Paisley	"	4	53·8
G. M. Kerry	Petrolia	Petrolia	"	7	54·0
J. H. Allan	Wheatley	Wheatley	P.M.R.	8	58·6
J. A. Ireland	Ridgewood	Ridgewood	"	2	60·5
Lampton & Co	Petrolia	Glencoe	G.T.R.	5	61·2
T. A. Moore	Grand Valley	Grand Valley	C.P.R.	3	62·3

In 1908 the lowest average temperature was 47·5 degrees and the highest 73·3 degrees; in 1907 the lowest average was 41·3 degrees and the highest 61·3 degrees.

Table No. IV. shows the temperature of marked packages of dairy and of creamery butter both in Ontario shipping points and at Toronto, and table No. V. temperatures of dairy and creamery butter at Ontario shipping points and at Montreal. The packages that were tested by the inspector at the railway stations were marked by him so that they could be picked out and retested when they were removed from the cars at Toronto and at Montreal.

TABLE No. IV.—Temperature of Ontario Butter at Shipping Points and at Toronto, Season 1909.

DAIRY BUTTER ONLY.

Number of Cars	9
No. of packages tested at Shipping Points and at Toronto	54
Average Temperature at Shipping Points	65·4 degrees.
Average Temperature at Toronto	62·0 "
Reduction in Temperature	3·4 "

CREAMERY BUTTER ONLY.

Number of Cars	13
No. of packages tested at Shipping Points and at Toronto	63
Average Temperature at Shipping Points	52·9 degrees.
Average Temperature at Toronto	51·1 degrees.
Reduction in Temperature	1·8 degrees.

TABLE No. V.—TEMPERATURES OF ONTARIO BUTTER AT SHIPPING POINTS AND AT MONTREAL, SEASON, 1909.

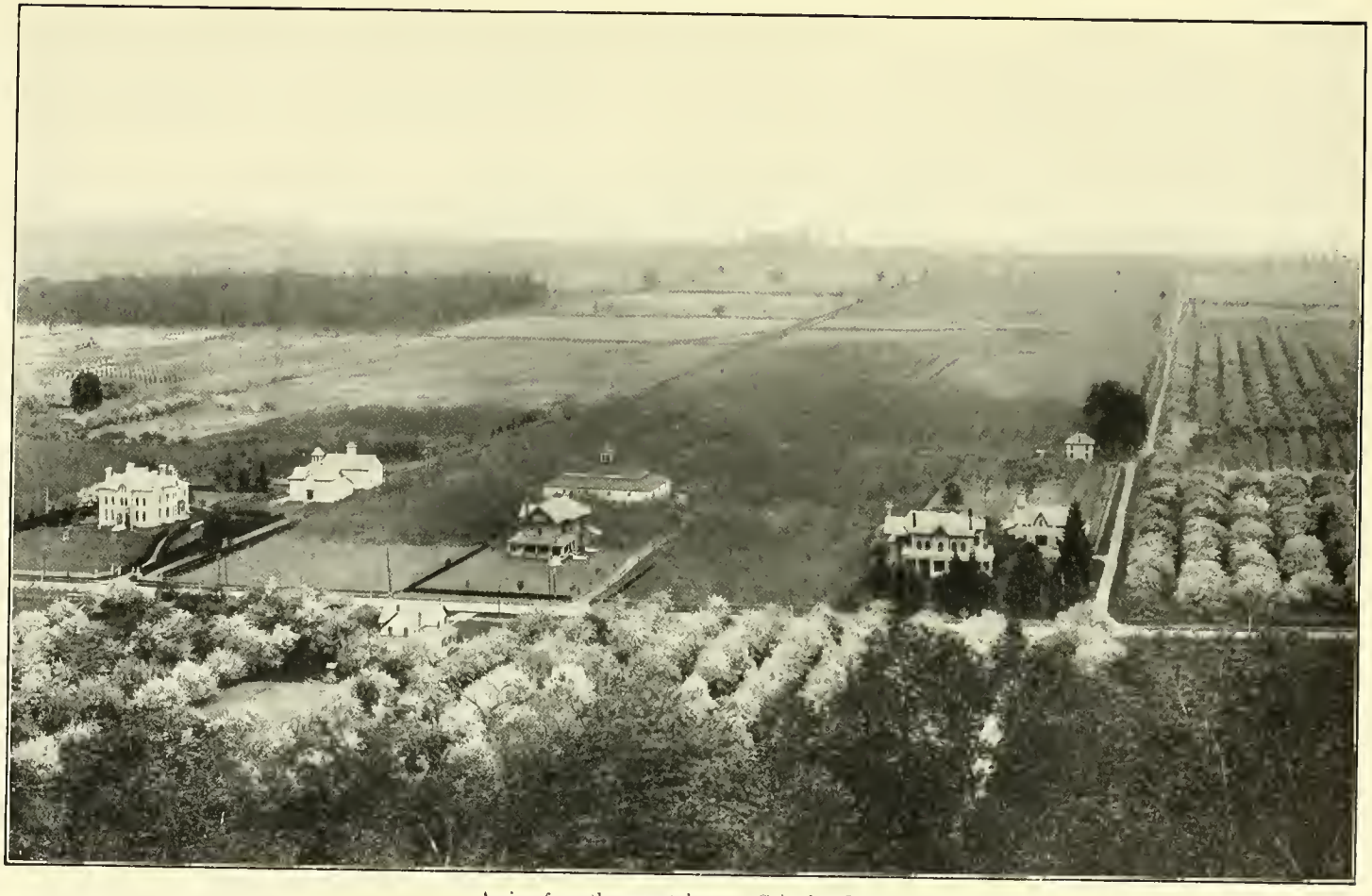
DAIRY BUTTER ONLY.

Number of Cars	12
No. of packages tested at Shipping Points and at Montreal	73
Average Temperature at Shipping Points	61·9 degrees.
Average Temperature at Montreal	52·2 degrees.
Reduction in Temperature	9·7 degrees.

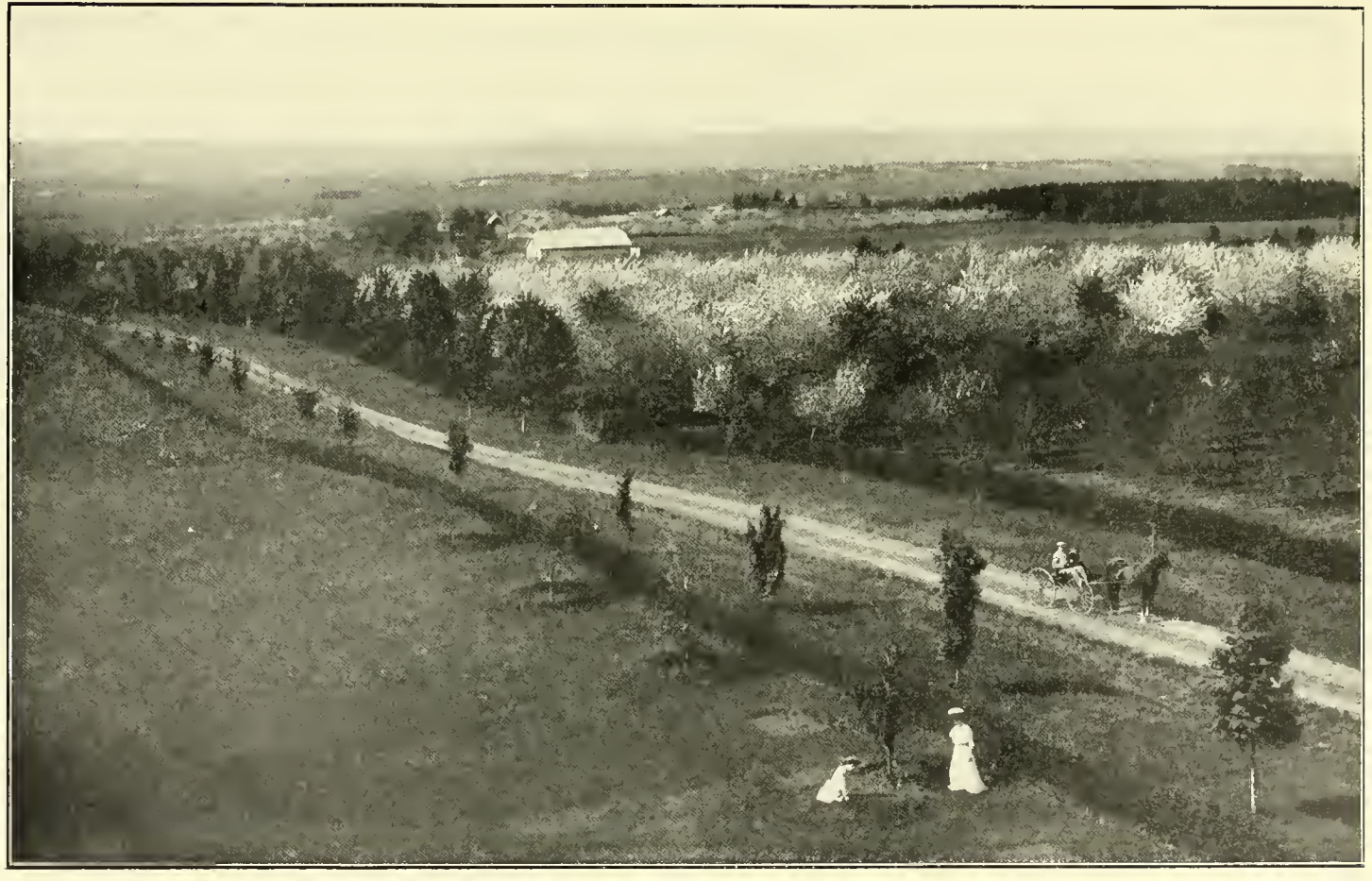
CREAMERY BUTTER ONLY.

Number of Cars	2
No. of packages tested at Shipping Points and at Montreal	4
Average Temperature at Shipping Points	51·8 degrees.
Average Temperature at Montreal	48·8 degrees.
Reduction in Temperature	3·0 degrees.

Table No. VI. gives the average temperatures of all marked packages of butter that were tested by inspectors at shipping points in Ontario and Quebec and that were re-tested at Montreal.



A view from the mountain, near Grimsby, Ont.



A view near Kentville, N. S.

TABLE No. VI.—Temperatures of Ontario and Quebec Butter at Shipping Points and at Montreal, Season 1909.

—	Number of Cars with Marked Packages.	Number of Packages Tested at Shipping Points and at Montreal.	Average Temperature at Shipping Points.	Average Temperature at Montreal.	Increase in Temperature.	Reduction in Temperature.
			Deg.	Deg.	Deg.	Deg.
Ontario via C.P.R	3	19	61·8	52·5	.....	9·3
" G.T.R	7	39	59·1	50·5	.....	8·6
" P.M.R	2	19	66·0	54·8	.....	11·2
Quebec (north of St. Lawrence) via C.P.R	11	189	54·4	51·9	.....	2·5
Quebec (south of St. Lawrence) via C.P.R	34	268	48·9	49·9	1·0	.....
Quebec via G.T.R	15	187	50·8	52·3	1·5	.....
" I.C.R	11	200	52·9	51·3	.....	1·6
" Q.C.R	3	26	54·2	54·1	.....	0·1
" C.V.R	3	27	48·7	52·7	4·2	.....
" Q.M.&S	5	39	56·4	54·1	.....	2·3
" C.N.Q.R	8	55	55·6	55·3	.....	0·3
Totals	102	1,068				
General average			52·6	51·7	.....	0.9
Season 1908, general average			54·9	54·4	.....	0·5
" 1907, " "			51·3	50·5	.....	0·8
" 1906, " "			52·6	53·2	0·6	.....
" 1905, " "			54·4	54·5	0·1	.....

ACKNOWLEDGMENTS.

In concluding this report I wish to thank the employees of this division for their loyal and devoted service during the year; the steamship agents at ports in Canada and in Great Britain for their kindness and courtesy to our inspectors, and the importers of dairy products and fruit in England and Scotland for information so freely furnished our cargo inspectors during the year and for their letters expressing their views regarding the season's trade.

I have the honour to be, sir,
Your obedient servant,

W. W. MOORE.
Chief, Markets Division.

PART III.—FRUIT

PART III.—FRUIT.

FROM THE CHIEF OF THE FRUIT DIVISION, TO THE DAIRY AND COLD STORAGE COMMISSIONER.

SIR,—I have the honour to submit a report of the work of the Fruit Division for the year ending March 31, 1910.

THE ENFORCEMENT OF THE INSPECTION AND SALE ACT, PART IX.

THE STAFF OF INSPECTORS.

The staff during the year under review consisted of twelve permanent inspectors and sixteen who were employed for about six months during the busy season. Three permanent and two temporary inspectors were added to the staff during the year, and by an arrangement with the Department of Customs, officers of that department at Nelson and at Grand Forks, B.C., have been appointed as fruit inspectors for the special duty of enforcing the law in connection with the fruit imported from the United States.

A re-arrangement of the staff of inspectors in 1909 provided for three additional inspectors in the prairie provinces, who were assigned as follows:—One as assistant inspector at Winnipeg; another for Regina and district, and a third one for Lethbridge and district. This permitted the inspector at Calgary to confine his work largely to the district between Calgary and Edmonton.

PECULIARITIES OF THE SEASON.

The year was marked by peculiarities that called for special attention and introduced certain difficulties into the work. The system of contracting early in the season, before a proper estimate can be made of the crop, resulted in the offering of high prices early in the season to the growers, and the storing by apple operators of a large quantity of apples quite unfit for the purpose, it being anticipated by the buyers that the crop of winter fruit would be only a moderate one, or perhaps a small one. It turned out to be rather above the average. The effect, so far as the inspection work was concerned, was in the temptation, irresistible to many holders of fruit, of trying to make up for the prices being lower than were expected, by grading their apples higher than the quality would justify.

QUALITY AND GRADING IN THE LAKE HURON DISTRICT.

Another disturbing element was the very large crop of apples in the Lake Huron counties of Ontario. There is an orchard in this district on almost every farm, primarily planted for home use. The surplus is given very little attention. The orchards are usually poorly cared for, and a very large proportion of the fruit is of inferior grades. A number of small buyers who had no intention, apparently, of doing more than selling out their options to some of the larger dealers, attempted to so brand their fruit that it could be shipped as No. 1 grade. Much of this fruit reached the Northwest as well as the markets of Great Britain during the month of November, with the result that the market prices were seriously affected not only by the surplus of low grade fruit, properly marked, but also by the large quantity of fruit that was fraudulently marked. Our inspectors were active in detecting much of this fraudulently

marked fruit; and the increased number of convictions in Ontario originated almost wholly in this section of the province.

The result as a whole will no doubt be eminently beneficial. The large crop of apples has shown the farmers the possibilities of their orchards, and the prosecutions that have taken place and the convictions that have been secured have shown them the necessity for proper grading. No doubt, in future, the farmers will appreciate the necessity of spraying and pruning in order to be able to sell their apples at a profit.

CONDITIONS IN NOVA SCOTIA.

Another large field of operation was the Annapolis Valley in Nova Scotia. The problem there is even more difficult than in Ontario. In Ontario the inspectors have to deal, for the most part, with apple operators who are in the business from year to year, and who, from the magnitude of their operations, have a comparatively large experience in packing. In Nova Scotia there is still a great deal of packing being done by the growers of the fruit. Many of these, of course, grow but a small quantity, and it is needless to say that in every community there are those who are not progressive. When such men undertake to pack their own apples, it is exceedingly difficult to secure conformity to such a law as the Inspection and Sale Act. Although it is a principle in law that no man can plead ignorance as an excuse, yet in actual practice it is found impossible to enforce the Inspection and Sale Act rigidly, especially in the case of a first offence and where there are only a few barrels involved. These are the conditions in Nova Scotia, and though many farmers have been fined this year, it was found difficult to secure convictions in a large number of cases where there was no intention to defraud and where the most that could be urged was ignorance or carelessnes.

THE ACT WELL OBSERVED IN BRITISH COLUMBIA.

In British Columbia fruit growing is for the most part in the hands of those who are making a business of it, and of men who are much above the average in intelligence. Consequently there are comparatively few breaches of the Inspection and Sale Act to report in British Columbia.

IMPORTED FRUIT CORRECTLY MARKED.

Probably owing to the precautions taken in appointing inspectors at Nelson and Grand Forks and increasing the staff in the Northwest, very few violations of the law were reported in the case of imported fruit in the western provinces.

IMPROVEMENT IN QUALITY OF FRUIT GOING TO THE WEST.

It is satisfactory to note that, notwithstanding the quality of the fruit, particularly in western Ontario this year, the general consensus of opinion among the merchants is that the quality of fruit shipped into the western provinces was as good this year as ever before, if not better. There is still need of much improvement, which in all probability will come, though slowly, partly as the result of a continued stringent inspection and partly as the result of the trade being developed along co-operative lines at the point of production.

INSPECTION AT THE POINT OF PRODUCTION.

The plan of inspecting in the orchards and at the point of shipment was continued this year to an even greater extent than last. Mr. Bryan in the Lake Huron district, and Messrs. Furminger, Carey and Rutherford in the southern and eastern portions of Ontario, were engaged in this work during the whole of the orchard shipping season. The results were not more satisfactory than last year. Indeed, the

results of this inspection have been altogether different from what was anticipated by those who asked for orchard inspection. It was anticipated by many shippers that it would be possible to have fruit inspected at Ontario points and delivered in the Northwest with practically a government guarantee of the fruit. This was found to be impossible.

The work of the inspectors in the orchards and at the shipping points was of a dual character. In the first place, they detected many cases of fraudulently packed fruit. These were reported and convictions were secured later. Perhaps the most important part of their labour was the instruction which they gave with reference to the Inspection and Sale Act, and the packing of fruit in barrels, as well as much general information regarding orchard culture. It is probable, too, that the presence of an inspector in the neighbourhood had a deterrent effect quite beyond his ability or opportunity to inspect.

It may be well to note here the difficulties that render it impossible, with the present conditions, for the government officials to guarantee any particular lot of fruit. The apples are shipped from a large number of stations in single carloads, collected perhaps through several days and, it may be, at different stations. The fruit in any particular carload is not uniform, but is the joint production of several different gangs of packers, not working under any common supervision and not headed by workmen above the average in intelligence. As a result, any particular car will show very great variations in the quality of the grading. It would be impossible, therefore, to guarantee the car with reasonable safety without an examination of almost every individual barrel. Had all the barrels in any particular car been packed by one gang or under the supervision of some one man, so that some uniformity might be taken for granted, it would then be possible to inspect a certain percentage of the car and judge of the rest of the car by this percentage. Even in this case, it is likely that great dissatisfaction would arise when it was discovered that some of the barrels were not up to grade in cars passed by a departmental inspector upon the plan of examining only a percentage of the packages. It can readily be seen how definitely unsatisfactory would be any plan that attempted to grade a car packed by different gangs by simply examining a small percentage of the car.

It may be necessary to explain here that as a matter of commercial practice, cars are accepted upon the inspection of a comparatively small number of packages but even in the case of a commercial transaction, this has proved extremely unsatisfactory. Many complaints are made with reference to the want of uniformity in cars. Nevertheless, in actual practice the merchants have an opportunity of averaging one against another, and if one car proves worse than the specimens examined, it is quite probable that another will prove better; so that in the end the large merchants especially come out fairly even. But no such law of averages would work in the case of government inspection. The cars that were worse than the specimens examined by the Dominion fruit inspectors would very properly be denounced and repudiated by the receiver, and the cars that were better than the certificate of the inspector would be accepted, of course, but no rebates would be given for having received better quality than the certificate indicated. It will thus be seen that it would be necessary to examine almost every barrel in the car before dissatisfaction by the receiver could be avoided. Such an examination, of course, would be an intolerable burden upon the industry, which in the long run would have to bear the cost of it.

It would be impossible, also, to supply competent inspectors to do the work with sufficient promptness to meet the demands of the trade. An inspector working alone could not open, inspect and close more than six or eight barrels per hour. Making due allowances for the time taken to move from station to station, it will thus be seen that it would take an army of men to inspect the trainloads of apples that leave Ontario alone during the shipping season.

CHANGING THE FRUIT OR THE GRADE MARKS AFTER INSPECTION.

Another objection that has more weight than is usually attached to it is the fraudulent use which apple operators would make of this system if it were adopted. As a matter of practice, it is impossible to examine the fruit in a car already loaded for shipment. The temptation would be strong to take the barrels nearest the door; and fraudulently inclined shippers would not hesitate to see that the poorly graded fruit was loaded in inaccessible places and that the good fruit was placed conveniently for inspection. That this is not a mere supposition is proved from the fact that at the present time many shippers in loading a car that is liable to inspection at the point of shipment, in transit, or on its arrival at its destination, load their cars in this way. Our inspectors report that in order to determine the character of a car, they are obliged to unload the greater part of the car until they can get at the barrels in the out-of-the-way places.

We have reason to believe, too, that unless the officers of the department would take possession of the cars as soon as they were inspected and keep possession until the cars were delivered, there would be shippers unscrupulous enough to change the grade marks on the packages after the car had been inspected, so that they could palm off, under a government certificate, fruit that had never been inspected at all, or fruit contained in packages the grade marks on which were different from the grade marks seen by the inspector.

It would not be just for me to make a statement of this kind as a supposition. I may be excused, therefore, for giving the particulars of a case that actually occurred, which will show that there are good grounds for the assertions which I have made. Apples were inspected in a storehouse in Colborne, and were watched until a short time before they were loaded upon a car. Indeed, there is reason to believe that the shippers of the fruit seized the first convenient opportunity when the inspectors were not in the storehouse to load this fruit into a car. As it was loaded the original grade marks which were on the fruit when inspected by the Dominion fruit inspectors, mostly grades No. 2 and No. 3, were scraped off the barrels and No. 1 and No. 2 substituted. The car was sent on its way to Great Britain, via Boston, no doubt, with the hope that the alteration in the marks would not be detected until it had left the country. The local inspectors, however, obtained information which led them to believe that the marks had been tampered with. The car was intercepted at Coteau Junction, and examined by a Dominion fruit inspector. It was found that upon the particular lot of fruit referred to the marks had been changed. An information was laid against the owner of the fruit, a conviction was made, and the magistrate imposed a fine of $100 and costs for this offence.

Another carload was discovered by the Dominion Cargo Inspector in Liverpool that showed evidences of the grade marks having been changed in the same way. Unfortunately, there was no ready way of securing a conviction in this case, as the offence was not discovered in Canada. But these facts illustrate how much care would have to be taken, and how much expense would have to be incurred, if any scheme of inspection at the point of shipment were undertaken by the department. As this expense would fall ultimately upon the fruit, it is not too much to say that the cost would in all probability absorb a large part of the profits that might be expected in the trade. It must be concluded, therefore, that up to the present time, there is no practical scheme of making an inspection at the point of shipment that will preclude the advisability of another inspection.

INSPECTION STATISTICS.

Below are tables giving the statistics of inspection for the seasons 1908-9 and 1909-10:—

Variety.	No. of lots Inspected.	No. of pkgs. in lots Inspected.	No. of pkgs. Inspected.
1908-9.			
Apples (bbls)	5,940	682,657	42,223
" (boxes)	248	100,792	2,701
Pears "	88	54,150	7,924
Peaches "	91	140,976	16,005
Plums (baskets)	54	16,505	1,474
Tomatoes "	53	11,381	779
Small fruits (quarts)	863	1,184,051	154,874
1909-10.			
Apples (bbls)	7,736	859,572	63,232
" (boxes)	902	157,939	7,363
Pears "	248	41,459	2,738
Peaches "	410	60,248	3,817
Plums (baskets)	264	62,883	4,257
Tomatoes "	149	50,043	3,241
Apricots (boxes)	11	12,495	481
Small fruits (quarts)	2,491	2,310,264	240,751

CONVICTIONS IN 1909-10.

The total number of convictions under the Inspection and Sale Act, Part IX., for the season 1909-10 has been 216. The names and addresses of the persons convicted under the Act for this season are given below:—

Ontario:

H. A. Adams.. .. .. Hawkestone.
E. P. Ainsworth.. .. .. Brighton.
Jesse Allin.. .. .. Holbrook.
Amabel & Arran Fruit Growers' Assn. Allenford.
J. G. Anderson.. .. .. Lucknow, (7 convictions).
Arran Fruit Growers' Assn.. .. .. .. Port Elgin (2 convictions).
Alfred Baeker.. .. .. Brussels (4 convictions).
Chas. Baynton.. .. .. Bothwell.
H. O. Bickle.. .. .. Brooklin.
John Bierwirth.. .. .. Elmwood.
Jas. Blackstock.. .. .. Collingwood.
Thos. Brain.. .. .. Oakville.
Albert Brent.. .. .. Port Perry.
Adam Brown.. .. .. Owen Sound (5 convictions).
Jas. Brown.. .. .. Clinton.
J. A. & E. Brown.. .. .. Port Hope (2 convictions).
T. F. Cain.. .. .. Lucknow (2 convictions).
A. C. Caldwell.. .. .. Dundas.
Duncan Cameron.. .. .. Ripley.
D. Cantelon.. .. .. Clinton (8 convictions).
C. F. Chase.. .. .. Frankford.
Thos. H. Cheer.. .. .. Brighton.
L. O. Clifford.. .. .. Oshawa.
Thos. Conlin.. .. .. Whitby.
Robert Conn.. .. .. Heathcote.
Adam Cook.. .. .. Acton.
S. Cowan.. .. .. Palmerston.
Jas. Coyle.. .. .. Colborne.
John Coyle.. .. .. Colborne (3 convictions).
Robert Coyle.. .. .. Colborne (3 convictions).
W. H. Davis.. .. .. Duntroon.
John Denholm.. .. .. Blyth (7 convictions).
Dickson & Clark.. .. .. Brighton.

Ontario—*Continued.*

Levi Dudley.. .. .. Whitby.
S. G. Dudley.. .. .. Colborne.
J. P. Dunn.. .. .. Streetsville.
Geo. Dyce.. .. .. Meaford.
Ira Edwards.. .. .. Colborne (3 convictions).
E. E. Elliott.. .. .. Woodstock,
R. Elliott.. .. .. Goderich.
R. R. Elliott.. .. .. Goderich.
J. W. Emerson.. .. .. Dunnville.
T. H. Everson.. .. .. Oshawa.
J. H. Fleming.. .. .. Kincardine (2 convictions).
G. Fothergill.. .. .. Belgrave.
J. C. Fuller.. .. .. Forest.
R. J. Graham.. .. .. Belleville.
W. Grierson.. .. .. Thornbury.
D. F. Hamlink.. .. .. Goderich (3 convictions).
W. J. Hamm.. .. .. Newcastle.
J. L. Hammond.. .. .. Crosshill (2 convictions).
David Hanniwell.. .. .. St. Davids.
Wm. Heidemann.. .. .. Shakespeare (7 convictions).
W. J. Henders.. .. .. Port Perry (2 convictions).
W. S. Holmes.. .. .. Lucknow (2 convictions).
Chas. Hunt.. .. .. Thornbury.
Ilderton Fruit Growers' Assn.. .. .. .. Ilderton.
Wm. Jenkins.. .. .. Clinton.
John Joynt.. .. .. Lucknow (4 convictions).
A. L. Kent.. .. .. Oakville.
W. R. Kent.. .. .. Delhi.
R. O. Ronkle.. .. .. Beamsville.
R. S. Lang.. .. .. St. Mary's (3 convictions).
Lemon Bros.. .. .. Owen Sound (3 convictions).
W. H. Lobb.. .. .. Clinton.
Lougheed Bros.. .. .. Clarksburg.
John McGuire.. .. .. Porter's Hill.
A. R. McKenzie.. .. .. Centreton (2 convictions).
H. McQuillin.. .. .. Lucknow (4 convictions).
C. W. Matthews.. .. .. Kerrwood.
D. C. Matthews.. .. .. Colborne.
F. G. Matthews.. .. .. Colborne (5 convictions).
Mitchell & Auld.. .. .. Watford.
G. A. Morris.. .. .. Gore Bay.
Wm. Nash.. .. .. Stony Creek.
Geo. F. Ostrom.. .. .. Belleville.
S. Overholt.. .. .. Jordan.
Henry Pedwell.. .. .. Thornbury.
John Perrin.. .. .. London.
Phillips & White .. .. Frankford (2 convictions).
Prentice & Sproule.. .. .. Collingwood.
R. Robinson.. .. .. Collingwood.
R. J. Ross.. .. .. Brighton.
John Shelton.. .. .. Ingersoll.
C. Sleep.. .. .. Port Perry.
R. D. Sloan.. .. .. Blyth.
Geo. Smith.. .. .. Delhi.
J. A. Snelgrove.. .. .. Brighton (5 convictions).
W. Stanley.. .. .. Holmesville.
J. M. Steel.. .. .. Clarksburg.
A. J. Stephenson.. .. .. Glen Oak (2 convictions).
Stewart Bros.. .. .. Kincardine (4 convictions).
J. Tasker.. .. .. Niagara-on-the-Lake.
R. Taylor.. .. .. Collingwood.
E. A. Trotter.. .. .. Grafton.
G. T. Turnbull.. .. .. Seaforth (2 convictions).
M. Unger.. .. .. Preston.
Vair & Gosling.. .. .. Barrie.
W. S. Valleau.. .. .. Owen Sound (2 convictions).
Andrew Vandewater.. .. .. Chisholm.
Wm. Varley.. .. .. Lucan.
Geo. Vivian.. .. .. Mitchell (4 convictions).
C. A. Watts.. .. .. Thamesville.
Watts Bros.. .. .. Port Dover.
Arthur Weaver.. .. .. Squires.
G. Wellington.. .. .. Forest.

Ontario—*Continued.*

W. H. Whitesides.. .. .. Ravenna.
H. Williams.. .. .. Clinton.
D. D. Wilson.. .. .. Seaforth.
F. L. Wilson.. .. .. Colborne.

Nova Scotia:

Walter Aylward.. .. .. Falmouth.
Fred. Banks.. .. .. Clarence.
J. D. Bennett.. .. .. Delhaven.
H. Bligh & Sons.. .. .. Cambridge.
W. L. Borden.. .. .. Lower Canard.
H. Brown.. .. .. Windsor.
Craig Caldwell.. .. .. Cambridge.
W. H. Chase.. .. .. Wolfville.
Mrs H. T. Chesley.. .. .. Bridgetown.
B. F. Chesley.. .. .. Clarence.
S. B. Chute.. .. .. Berwick.
J. Dykens.. .. .. Wolfville.
E. D. Ells.. .. .. Kingsport.
D. Goucher.. .. .. Melvern Square.
J. S. Marshall.. .. .. Kingston.
D. A. Morton.. .. .. Billtown.
W. L. Newcomb.. .. .. Canning.
L. E. Parker.. .. .. Newport.
P. D. Phinney.. .. .. Granville.
W. W. Pineo.. .. .. Waterville.
W. G. Ritchey.. .. .. South Farmington.
J. Sexton.. .. .. Falmouth.

Quebec:

F. H. Clark.. .. .. Montreal West.
A. Gravel.. .. .. St. Joseph du Lac.
T. S. Vipond & Co.. .. .. Montreal.
Geo. Vipond & Co.. .. .. Montreal.

Manitoba:

Geo. Vipond & Co.. .. .. Winnipeg.

Alberta:

Royal Fruit Co.. .. .. Edmonton.

British Columbia:

J. Y. Griffin & Co.. .. .. Nelson.

The fines in these cases aggregated $2,980, which has been forwarded to the Receiver General for Canada.

It will be noted in this list that there are eighteen men who have been fined three times and over, twelve men who have been fined twice, and 109 who have been fined once. There are on this list only thirteen names of men who were fined last year. This indicates fairly clearly that the fraudulent packing is still largely the result of ignorance, and that the discipline of a fine produces good results.

On February 17 last, Dominion fruit inspectors examined certain barrels of Spy apples in the warehouse of Mr. Robert Coyle, of Colborne, marked No. 2 and No. 3. After these apples were loaded on the car, there was reason to believe that the grade marks had been changed. The car, after proceeding part of the way on its journey for export, was intercepted and examined, and it was found that the original grade marks, No. 2 and No. 3, had been erased and No. 1 and No. 2 respectively placed in their stead. For this offence the magistrate fined Robert Coyle $100 and costs.

Attention is drawn to the fact that imported fruit must be marked as required by section 320 of the Inspection and Sale Act before being offered for sale. The Royal Fruit Company, Edmonton, and Messrs. J. G. Griffin & Co., Nelson, B.C., were convicted and fined for not complying with the Act in this respect.

LARGE OPERATORS' DIFFICULTIES.

A large number of prosecutions are made in the case of apple operators who have gangs packing under their instructions. Apple picking and packing last but a

few weeks, and while this work is going on it is pushed most strenuously. It is desirable, especially in the case of winter fruit, to leave the apples on the trees as long as possible to acquire colour, and yet, once having the colour, there is a grave danger of their being caught by an untimely frost; hence the haste to have them picked and stored. It is not remarkable, therefore, that all available labour, irrespective of its quality, should be pressed into service. In many cases the pickers and those who pack, have had no previous experience; nor is it to be wondered at that men who are unfit for any other service will be accepted at some figure for this work. There is always a dearth of labour at apple-picking time. Large dealers, who employ sometimes as many as thirty or forty gangs of men, have in the past been the victims of the careless, not to say fraudulent, practices of workmen who cannot be said to be in any sense of the word reliable.

PRINCIPALS HELD RESPONSIBLE FOR THEIR SUBORDINATES.

Nevertheless, the principals have in all such cases been held responsible for the work of their subordinates; and, as a consequence, many apple operators feel that the Inspection and Sale Act presses unduly upon them. Many of the more enterprising and better business men among them have accepted the situation and have added to their staff a number of independent overseers, who take no part in the work except to see that every carload that bears the brand of their employer is properly marked and graded. This is a new feature in marketing apples, and wherever it has been given a thorough trial it has been found to work satisfactorily. It adds, of course, to the cost of packing the apples, but this cost falls ultimately, as all legitimate costs must, upon the producers and consumers, and neither of these, nor indeed any one who has the true interests of the industry at heart, will object to the small increase in cost.

The more experience we have in the enforcement of the Inspection and Sale Act the more we are impressed with the necessity of holding the principals strictly to account for the work of their subordinates. An order in council, dated September 14, 1901, protects the principals by making it an offence punishable by a fine not exceeding $50 for any workman to pack or mark apples fraudulently.

WANT OF DEFINITENESS IN CONTRACTS.

One of the evils of the trade is the want of a definite contract between the larger apple operators and the smaller buyers. There is frequently no written contract between these parties, and it is therefore, very difficult to tell who is the responsible party. Even where contracts are drawn, there is a want of definiteness upon this point.

A CONTRACT WITH INTENT TO DECEIVE.

Indeed, there is reason to believe that in some cases, at least, contracts have been drawn up so worded as to make it as indefinite as possible as to who is the owner at the time of packing. At the time of making this report, there is an appeal pending to determine a case of this kind.

FRUIT CROP REPORTS.

The fruit crop report was issued at the end of each month, beginning with May and ending with September. This feature of the work of the Fruit Division continues to be much appreciated by the fruit growers. Blank schedules are issued to about 3,000 correspondents; of these about one-half send in good reports. Care is taken to have the correspondents distributed evenly, so as to represent in number the importance of the fruit industry in every portion of the Dominion. The schedules are so constructed that not only the different kinds of fruit are reported upon, but all the standard varie-

ties of these kinds. This feature is of marked value, particularly in connection with apples. The reports of the correspondents are read carefully and the results printed the last day of each month. A synopsis is made of the reports, of convenient length for newspaper publication, and sent to all Canadian newspapers likely to be interested. Each edition of the fruit crop report consists of 10,000 copies, and the mailing list is being constantly increased.

WEATHER CONDITIONS FOR 1909-10.

The weather conditions for the season of 1909 were particularly favourable for fruit. Practically no winter injuries were reported except from British Columbia, and a slight injury to the peach buds in the Niagara district. There still remained, however, enough buds in the Niagara district to insure a full crop of peaches. The winter injuries in British Columbia were exceptional, and though the actual damage done was not great, it was useful perhaps, inasmuch as it demonstrated, while the plantings were still small, where it was dangerous to plant tender fruits, in large quantities at least.

There were no late spring frosts to interfere with the setting of the fruit, and though the season was later than usual, the weather during the blossoming period was all that could be desired. Notwithstanding that there had been a fairly good crop of fruit two or three years in succession, the set of fruit for 1909 was heavy.

During the months of June and July the weather continued favourable, though with somewhat less precipitation than normal. The month of August was unusually dry, but this drought was broken by heavy storms towards the last of the month, bringing with them severe wind and hail storms. In southern Ontario, these caused heavy losses to a few individual growers; but the aggregate losses were not large.

September was a succession of warm days, but the nights were somewhat cool. Nevertheless, it was a good month for ripening and fruits that came in normally during this month were, perhaps, rather earlier than usual. The weather affected to a certain extent the earlier apples and rendered early shipments without ice extremely hazardous There were not the usual September winds and there was less than the usual precipitation.

October proved an excellent month for apples, except that the later apples did not colour as rapidly as was anticipated. Indeed, in the more important apple districts the colouring of the fruit became a serious problem, and many orchardists passed anxious days awaiting for their Spies and Baldwins to get the proper colour on the trees before venturing to pick them. As it was, many were picked somewhat poorly coloured; many others were left too long and were caught with a rather heavy frost in the third week of October.

Upon the whole the season may be said to have been a good one for fruit, particularly for apples, but for various reasons many varieties did not keep well. Spies in particular went down very rapidly early in the winter. This has been attributed to the warm September; others attribute it to lack of colour which the apples should have received in October; but it is difficult to assign any specific cause.

The final harvesting of the apple crop showed that the conditions as to the quantity of the fruit were fairly uniform throughout the season. A rather light crop of early apples set; this light crop held through the season and was harvested early in good condition. The winter apples were somewhat heavier,—a medium crop or rather above. Spies and Baldwins in Ontario proved to be more than usually abundant.

The Nova Scotia crop was fairly evenly distributed among the standard varieties, and proved to be the largest in the history of the province. The increase, however, was due for the most part to the new orchards that are constantly coming into bearing, the older orchards having only a normal medium crop.

PRICES.

The market conditions are determined only in part by the condition of the apple crop. The peculiar system of selling which is adopted in Canada, places a great in-

fluence in the hands of the local buyers; and while there are combinations, cliques and associations among these buyers, there is no controlling organization for the whole body. As a result, market conditions are too often determined very largely by circumstances quite apart from the quality and quantity of the fruit. In 1909, the crop of winter apples in District No. 3, embracing the territory north of Lake Ontario, did not show prospects for a large crop. Many of the more active apple buyers live in this section and, noting the high prices given for early apples and the small quantity of winter fruit in their neighbourhood, they appeared to conclude that the crop of 1909 was likely to be short. They proceeded, therefore, early in the season to buy almost indiscriminately and at comparatively high prices. The rise in price was probably accentuated by a large number of preliminary inquiries from the Northwest.

THE CROP IN THE LAKE HURON DISTRICT.

The crop in the Lake Huron counties was a fairly large one, not for the number of trees, but for the district. This section contains a large number of orchards, none of them of great size and all but a few on ordinary farms, where very little care is given to the orchards. Consequently the yield per tree is small and the crop very irregular from year to year; but when there comes a year like 1909, when there is a fair setting of fruit in all the orchards, the aggregate of fruit is very large, but the quality quite inferior. This fruit was bought freely in the early part of the season, usually by the lump. At harvest time the apple operators (the buyers) followed their usual practice of harvesting everything in the orchards. In the meantime, prices had declined. Many of the buyers found themselves loaded with an inferior lot of fruit, and to 'break even,' many of them branded this inferior fruit higher than it deserved. Of course, much of this fraudulently marked fruit was discovered by the fruit inspectors and numerous prosecutions were the result.

It is noticeable in an analysis of the origin of the cases that were prosecuted by the Fruit Division, that the greater number of them originated in the district where the poor sample of fruit is grown and where there is no organization among the growers.

QUANTITY OF FRUIT STORED.

It is not easy to secure exact figures with reference to the quantity of apples stored in Ontario and Nova Scotia for winter shipment. For several years the Fruit Division has gathered figures in an unofficial way. These figures have been verified by the actual shipments later on and, while there can be no exact correspondence, the result is near enough to show that the unofficial figures approach the actual quantity. The larger quantity of fruit is stored north of Lake Ontario, in the province of Ontario, and in the numerous warehouses in Nova Scotia from Bear River to Windsor. The following table gives the aggregate of fruit in store in Eastern Canada the 1st of January, 1910:—

	Barrels.
Ontario, west of Toronto	22,000
" Georgian Bay district	30,100
" north of Lake Ontario	184,100
Nova Scotia	386,000
Montreal, P.Q.	75,660
St. John, N.B.	21,300
Total	719,160

It would greatly steady the market if authentic figures of this sort could be published early in the season. It would be fairly easy then for merchants to make calculations with reference to the quantity of stock on hand, and it would enable those holding apples to make calculations with reference to the marketing.

EVAPORATED APPLES.

The condition of the Canadian evaporated apple trade is not altogether satisfactory. So long as our present system of selling the apple crop is in vogue, improvement in the evaporated apple trade will be slow. The difficulty arises in part in the evaporators not having the proper grade of green fruit for their purpose, and in part from carelessness in the process of manufacture. Even if the greatest care were taken with the present stock, it would be extremely difficult to produce a high grade of apples, and though there is no excuse for careless and slovenly work in the evaporators, nevertheless, with the best work only a second quality of goods can be produced. This arises from the fact that nothing but cull fruit, and usually cull fruit of a very low grade, is available for evaporation. Four-fifths of the apples are sold to apple evaporators who buy largely by the lump. That is, they contract for the orchard and all the fruit that is in the orchard, even where the apples are paid for by the barrel. There are few farmers who have a sufficient quantity of culls to pay them for hauling them to the evaporator, considering the low price which is offered by the evaporator and the scarcity of labour at this time of the year. As a consequence, large quantities of apples go to waste, that under a proper system of selling the fruit, would be utilized for evaporated stock even though the product was not of No. 1 quality. An estimate of the quantity of this material going to waste leads me to believe that, properly handled, the low grade apples that now go to waste or are sent to market with little or no profit to anybody, would more than pay the expenses of harvesting the crop, would leave the market in a better condition for green fruit and would infinitely improve the quality of evaporated stock. This can be brought about only when the apple growers will unite in co-operative associations. Having the evaporator always at hand and convenient to the fruit, the evaporated stock could be manufactured with less cost. When the value of a fancy brand of evaporated stock accrued to the growers of the apples, there would be a much greater inducement to evaporate all green apples lower in grade than No. 1, or at least all that were not strictly good No. 2.

FRUIT MEETINGS.

At the close of the active inspection work in March and April, the inspectors were for the most part detailed to attend fruit meetings in the different provinces. The number of meetings attended is as follows:—

P. J. Carey	28
G. H. Vroom	31
W. W. Brown	22
M. R. Baker	10

I attended fifteen meetings in southwestern Ontario, Nova Scotia and Prince Edward Island.

DECLINE OF WINTER APPLE ORCHARDS IN ESSEX AND KENT COUNTIES, ONTARIO.

In southwestern Ontario I found a rather unfortunate state of affairs. The counties of Essex and Kent are specially adapted for the growing of fruit. The soil is peculiarly fertile and the climate the earliest in Canada. Latitude 42 passes through the southern part of the county of Essex, and the proximity of Lake Erie and Lake St. Clair tends to secure equability of climate.

Notwithstanding these advantages in climate and soil, the fruit industry has been declining from year to year. The causes of this are not far to seek. Unlike many portions of Canada, these sections of the country can grow a great variety of products

and succeed in all. They have not, therefore, the incentives to the production of fruit that they would have if confined to this single product.

Early in the history of the district, the growers turned their attention largely to the winter varieties of apples and they succeeded admirably. Large orchards were planted, products of which constituted chief sources of revenue on many farms. The success of these orchards induced the planting of large orchards farther north as the northern country opened up, and then it was discovered that the winter apples of these northern counties were better keepers, using only ordinary storage and the rather imperfect transportation facilities of a few years ago. The orchards in these southern districts, though they produced as well as ever, were relatively not as desirable as they were formerly and the owners of the orchards allowed them to fall into neglect. Indeed quite frequently orchards in their prime have been cut down because their owners did not consider them sufficiently remunerative. They had not yet learned the lesson which the orchardists of New York State similarly situated had learned, that their winter apples could be kept in perfect condition so as to compete in quality and even excel the very best northern product, by the proper using of cold storage. Neither have they learned that there exists a good market which will absorb all the early fruit which they can produce. They are quite sceptical, too, of the possibility of transporting tender early fruit to these long distance markets. Early apples with them had been grown so well and so easily and had been so worthless as a market product, that it was a strange doctrine to tell them that with proper cold storage facilities in their own orchard, and with the cold storage facilities which were supplied them now by transportation companies, they could put their early apples into Covent Garden, England, or into Calgary in the Northwest, in as good condition as they could formerly put them into the markets of the nearby city of Toronto. There are, however, some signs of improvement.

CHATHAM CO-OPERATIVE ASSOCIATION.

In the neighbourhood of Chatham, the formation of a co-operative association has helped to inform the public with reference to the advantages of these counties, and to impress the fact that the transportation facilities have been so materially improved that the more tender early fruits can now be shipped with perfect safety to the large and distant markets.

ESSEX TRUCK AND EARLY FRUIT FARMS.

I found, also, that several enterprising growers in the neighbourhood of Leamington, in Essex County, had specialized in early products and were succeeding splendidly. These vegetable and fruit growers were shipping large quantities of early tomatoes, cucumbers, musk melons, early strawberries and raspberries, and a small quantity of early apples. There is no reason to doubt that these counties might very profitably be devoted to the early varieties of all kinds of fruits. They would be the first in the market and their products would go into consumption before the rest of the province had anything to offer. The difficulty, of course, will be in the starting, inasmuch as the transportation rates and cold storage facilities, which are essential to the success of this trade, could not be applied so profitably to small quantities as to large quantities. In the development of the co-operative associations we must look for the means of increasing the early fruit and early vegetable trade, for which the counties are particularly favourably situated.

APPLE GROWING IN NOVA SCOTIA.

In Nova Scotia, the fruit interests are confined almost exclusively to the apple, and it is a pleasure to record that there has been in late years a very marked improvement in connection with this industry. The apple industry is almost wholly confined to the three counties, Annapolis, Kings and Hants; and nowhere in Canada, within

Landing Nova Scotia Apples at Victoria Docks, London.

Loading Nova Scotia Apples into River craft, Victoria Docks, London.

the same area, can be found so large an acreage of well tilled and well pruned orchards. From Digby to Falmouth, in the valley of the Annapolis and Cornwallis rivers, as well as in the valley of the Gaspereaux and Avon, many farmers rely almost entirely upon apples as their moneyed crop. Indeed, it seems as if the danger point had almost been reached in specializing along this line. Many of the larger growers keep no live stock, or very little, and consequently the supply of barnyard manure is quite inadequate for the needs of their orchards, and large quantities of commercial fertilizers are used as substitutes. This undoubtedly pays; but it is a question whether it would not be in the interests of the country as a whole if more stock were kept. Even if part of the feed had to be purchased, I venture the opinion that it would be true economy to spend more money for cattle feed and less for fertilizers. Indeed, the problem has worked out in this way in some cases, and I strongly recommend that more attention be directed to this question of keeping more stock in the fruit districts.

IMPROVEMENT IN ORCHARD PRACTICE.

It is a pleasure to note the improvement in the orchard practices compared with seven years ago, when I first attended orchard meetings in Nova Scotia. Many of the recommendations that were made then and which appeared to the growers as innovations have been adopted here and there, and the success of the more modern methods is now becoming apparent. At my first meeting I strongly recommended the low headed tree. Many objections were raised and very few of the orchardists have yet adopted this method. Nevertheless, some of the largest planters of new orchards have adopted this, and the many advantages are becoming apparent. It is not too much to expect that in the near future all the young orchards will be trained with low heads.

CLEAN CULTURE.

Clean culture was in use by a few many years ago; but it is only within recent years that it has become common. It is now almost universal in the orchards of those who are depending upon apples as their moneyed crop. Unfortunately, many of the farmers who make apple growing simply a side line do not cultivate their orchards and, as a consequence, they place upon the market a very inferior quality of fruit.

IMPROVEMENT IN SPRAYING.

For a number of years the Fruit Division conducted experiments in power spraying in Nova Scotia. One of the effects of these demonstrations was to impress the value of spraying, and now it is seldom that any one questions its economy. It is quite true that a great many apple growers do not spray yet; but it is very seldom that you meet with one who does not apologize for not doing so, and still rarer that you find an apple grower who will assert that spraying is of no use. The fact that spraying is universally regarded as essential to success in apple growing is a great step in advance.

VARIETIES FOR NOVA SCOTIA.

Nova Scotians have something to learn yet with reference to varieties. The peculiarities of the climate and soil here, as everywhere, must dictate what is more profitable to grow. The Baldwin is successful over so large an area of North America that many growers seem to regard it as a variety that may be planted anywhere. It can be grown in Nova Scotia, it is true, but other varieties, and perhaps better varieties, succeed so well that it seems hardly worth while to plant it when these are available. To a less extent this is also true of the Northern Spy. The Gravenstein is becoming less popular as a commercial apple and is scarcely planted at all in the younger orchards, for quite different reasons. This apple can be grown to perfection, but the tree appears to have developed a weakness in the matter of collar rot. The facilities for getting the fruit to market safely have not yet been provided. It seems

somewhat unfortunate that where an apple can be grown to such perfection as the Gravenstein in Nova Scotia, it should pass out of cultivation from purely preventable causes. There seems to be no doubt that collar rot can be successfully combatted if the work is intelligently approached. To get the fruit to market requires only an improvement in the matter of cold storage in connection with the present system of transportation.

STOREHOUSES.

Nothing is more noticeable in connection with this industry than the large increase in the number of storehouses that have been erected at various shipping points in the Annapolis and Cornwallis Valleys. For the season 1909-10 there were at least seventy storehouses owned either by private shippers, by co-operative associations or by large receiving firms in Great Britain. Perhaps it is not altogether a matter of congratulation that so many of these storehouses are owned by others than the fruit growers themselves. Supplying storage capacity is a small matter compared with the value of the product stored. If, however, the storage capacity is controlled by outside parties, it curtails sometimes to a very large extent the liberty of the growers to secure proper market advantages for their product. It confines them to a single firm who may or may not have the proper connections to secure the best market prices. It is to be hoped that the co-operative sentiment will extend so rapidly in the future that the storehouses at least will all be in the hands of the fruit growers.

CO-OPERATIVE ASSOCIATIONS.

The co-operative idea has been slow in taking root in Nova Scotia; but the development in 1909-10 would seem to indicate that, once having started, it will make rapid progress. I visited several of the associations and found them all thoroughly alive to the advantages of co-operation, and the indications were good that in the near future the greater part of the fruit will be handled co-operatively.

MEETINGS IN PRINCE EDWARD ISLAND.

I also found great advances in Prince Edward Island. The meetings were all well attended and in every case by men who were likely to plant orchards. The success of the apple industry in Prince Edward Island is assured if a sufficient number of growers can be induced to make the output large enough to engage the attention of transportation companies and buyers. The two difficulties in the way at the present time are the want of familiarity with methods of packing and the difficulty of reaching a suitable market. Both these difficulties will rapidly disappear with an increase in the crop. At the present time there is not sufficient fruit grown upon the island to supply the local needs, except, perhaps, it may be in the case of early apples; but even in early apples it is doubtful whether more are grown than could be used upon the island if they were properly distributed.

BOX PACKING DEMONSTRATIONS.

For many years the Fruit Division has been engaged in some form of work for the encouragement of box packing in Eastern Canada. The results on the whole are satisfactory. At first the work had to take the purely educational form of demonstrating the value of box packing. At fall fairs, fruit growers' meetings and other places, demonstrations were given, drawing attention to box packing and giving occasion for pointing out the many advantages of this mode of packing high class fruit.

Public interest having been aroused and the trade having acquired some magnitude, it became necessary to secure experts in box packing to give instructions in

the details of the work. This work was continued during the season of 1909-10. Mr. F. G. Earl, of Lytton, B.C., was engaged and commenced work the 17th August in southern Ontario. Later he went to New Brunswick, Prince Edward Island and Nova Scotia in succession. He gave demonstrations during this time at exhibitions in London, Ont., Fredericton, N.B., Charlottetown and Georgetown, P.E.I., and Middleton, N.S. He was able, also, to visit Truro College, N.S., for classes with the students.

Mr. Earl was well received everywhere, and furnished a most valuable report of his tour. He gives it as his opinion that if the same care with reference to grading and packing were observed in Eastern Canada as on the Pacific slope, a very large trade could be developed in boxed fruit. One of the chief criticisms made by Mr. Earl was that the orchard methods were such as to permit a large quantity of third grade fruit to reach maturity. Consequently, the task of securing a grade sufficiently good for boxing was materially increased. He strongly recommended the farmers to thin the fruit, prune and spray carefully and cultivate their orchards, so that at harvest time there would be little to pick except No. 1 fruit. If this were followed, Mr. Earl expressed the opinion that boxed fruit from Eastern Canada would very soon become a marked feature of the apple trade.

Respectfully submitted,

A. McNEILL,
Chief, Fruit Division.

PART IV.—COLD STORAGE

PART IV.—COLD STORAGE.

BY THE DAIRY AND COLD STORAGE COMMISSIONER.

The cold storage business has been much discussed during the year and some very severe and rather senseless things have been said about it in connection with the increased cost of living. There may be abuses, as there are in most lines of business, but the broad fact remains that the cold storage warehouse enlarges the market for perishable products during the periods when surplus stocks are available, and thus encourages production; and it is, after all, the law of supply and demand which is the most important factor in regulating prices. Without the cold storage warehouse there would be enormous waste of perishable products, still further reducing the supply, which could have only one effect on the cost of these articles to the consumer. The cold storage warehouse serves the same purpose as the grain elevator or as a warehouse intended for any other product, and with the growing centres of population and demand for luxuries at all seasons of the year, the cold storage warehouse has become a necessity of modern civilization.

The following paragraphs are quoted from bulletin No. 23 of the Dairy and Cold Storage Commissioner's series, recently issued:

The cold storage industry has grown out of the practical experience of people living in northern climates who have observed the preservative effect of 'cold' when perishable food products are exposed to it. Every family that makes use of a kitchen refrigerator, or that places milk, butter, meats, fruit or other vegetables in a cold cellar, puts into practice the principles which underlie the operation of the most up-to-date cold storage warehouse in the country. The difference is one of degree as measured by the temperature employed in each case.

The thrifty householder who lays in a supply of butter, poultry, meats, &c., during the early part of the winter, when such things are in supply, and then keeps them in some unheated storeroom in a frozen condition for several months, is employing exactly the same means to preserve them as if they were taken to a cold storage warehouse, with this qualification, that in the warehouse there is practically no change of temperature—no danger from thaws—and therefore, greater certainty of preservation.

The farmer who keeps apples, potatoes or any other vegetable in a 'pit' during the winter, is taking advantage of the preservative effect of a low temperature when he covers them only sufficiently to prevent the frost from penetrating.

The fruit grower who stores his apples in a frost-proof warehouse depends on the same means of preservation as the cold storage man does, namely a low temperature without frost. There is no difference in the effect, whether the temperature is reduced naturally or whether the same result is brought about by artificial means. The advantage, however, is with the cold storage warehouse, because the temperature can be absolutely controlled and the preservative effect of 'cold' can be applied when it is most needed, namely during the warm weather of autumn, or immediately after the fruit is harvested and before cold weather arrives.

Perishable food products are so-called because of the tendency to undergo change and decay. These changes are controlled to some extent by the degree of heat to which the articles are exposed. Thus milk will keep sweet longer in a cool cellar than it will in a warm pantry, and a well iced refrigerator will keep it longer than the cellar, because of the lower temperature. These somewhat obvious facts are mentioned to show that the cold storage industry is merely the organized and systematic application of well known and long practised principles.

The cold storage industry benefits both the producer and the consumer by working to prevent alternate periods of glut and scarcity, accompanied by unprofitable prices at one time and exorbitant or prohibitive prices at the other extreme. The benefits derived from cold storage are well illustrated in its influence on the egg trade. There are other methods of preserving eggs, but of late years cold storage has been recognized as the most efficient. If it were not for the cold storage facilities which are now available, the price of eggs would, for lack of a market, go so low during the laying period of spring and early summer that production would be seriously discouraged and the scarcity which would result during the off season would boost prices for all kinds of eggs to such an extent as to make them prohibitive for the majority of the people.

The use of cold storage gives the producer a fair price for his eggs at all seasons, and the consumer can secure a storage egg in fair condition during the fall and winter months at reasonable prices. No one would claim that a cold storage egg is equal to a fresh laid egg, but fresh laid eggs are not available in any quantity, and without the storage eggs, a large proportion of the people would be unable to secure eggs of any kind during the winter months, no matter what price might be paid for them. The same thing applies to butter, poultry, meat and fruit in a lesser degree.

PREJUDICE AGAINST COLD STORAGE AND COLD STORED FOODS.

That many people are prejudiced against any article which is said to have been in cold storage, can hardly be denied, and it must be admitted that they sometimes have reason to be suspicious of cold storage goods. The average consumer is not in a position to discriminate between effects which are actually due to cold storage and those which are the result of improper handling, or lack of ordinary precautions in the storing of goods already out of condition. It is true that food products do not always come out of cold storage in good condition, but it is also true that they do not always go into cold storage in good condition. It is not often that goods are kept long enough in cold storage to show serious deterioration if the storage conditions have been right and they have been placed therein in proper condition.

The cold storage business has suffered indirectly from the actions of dishonest dealers who misrepresent cold storage goods, as in the case when storage eggs are sold for strictly 'new laid' or even for 'fresh' eggs. This is probably not the proper occasion on which to discuss the ethics of the cold storage business, but one thing is certain, such practices will not assist in securing for it its proper place in the estimation of the people.

The cold storage industry is founded on sound economic principles and, properly conducted, is of benefit to both producer and consumer. There are faults of management in the operation of the cold storage business, as in other kinds of business. The cold storage business is a new one and it has been undertaken, in many cases, by men with no previous experience and with no accurate knowledge of either the principles or the practice of refrigeration. Lack of experience and knowledge has also resulted in badly constructed, poorly insulated and insufficiently refrigerated warehouses. These defects are gradually being remedied through the lessons taught by experience. The housekeeper who may be inclined to sneer at cold storage provisions, as such, should discard the ice box and all other attempts to keep things 'cool.' The fruit grower or dealer who does not believe in cold storage should be consistent and keep his apples or other perishable products at ordinary room temperature during the winter months.

THE FIELD FOR EXTENSION OF THE COLD STORAGE INDUSTRY IN CANADA.

The field for the expansion of the cold storage business, through the public cold storage warehouse, is not very extensive in Canada at the present moment. The larger centres have already been supplied and the openings where a purely cold storage business may be conducted successfully in distributing centres are not numerous. On the

other hand, the opportunities for the successful operation of small warehouses in producing districts, seem to afford the best opening for the extension of the industry at the present.

There are many localities where small cold storage warehouses operated in connection with the produce business should prove of advantage not only to the owners, but to the producers in the locality. The apple trade is susceptible of much improvement by the judicious adoption of cold storage facilities. It would be a comparatively simple matter to convert many of the present apple warehouses, of which there are so many at points on Lake Ontario and along the Dominion Atlantic Railway in Nova Scotia, into cold storage warehouses. It would be quite practicable in many places to establish a central refrigerating plant with pipe lines running to each warehouse. Only slight alterations in the insulation would be necessary. Such warehouses could be equipped with cold storage at comparatively little cost.

The fishing industry and the trade in fish products probably offer as good a field for the extension of cold storage as any other line in Canada at present. The great distance from the sea at which a large number of the people of Canada must always reside, makes it impossible for them to procure sea fish in fresh condition without the use of cold storage and cooling facilities. The application of cold storage to the fishing industry of Nova Scotia within the last two or three years has resulted in the rapid development of the inland trade and it is undoubtedly capable of great extension with the aid that may be rendered in this manner.

SUBSIDIES FOR COLD STORAGE WAREHOUSES.

There has been considerable activity in the construction of cold storage warehouses during the year. Contracts have been entered into for the erection of cold storages warehouses, under the terms of the Cold Storage Act, with the following firms:—

The J. D. Moore Co., St. Mary's, Ont.

The B. Wilson Co., Victoria, B.C.

The Maritime Cold Storage Co., Lockeport, N.S.

The Canadian Fish & Cold Storage Co., Prince Rupert, B.C.

The Hamilton Cold Storage Co., Hamilton, Ont.

The Dominion Fish and Fruit Co., Quebec, P.Q.

CREAMERY COLD STORAGE BONUSES.

During the past season forty-seven owners of creameries made application for information regarding the bonus paid for the erection of creamery cold storages. Of this number eighteen complied with all the conditions and received the full bonus of $100. The other twenty-nine applications were disallowed, either because of poor construction or failure to maintain proper temperature in the cold storage, or because the applications were sent in too late. In some cases the erection of the cold storage was postponed until 1910. Two creameries which had received the first instalment of the bonus some years ago, under the old arrangement, were paid the final instalment of $50 each.

Following is a list of the bonuses paid during the year:—

Location of Creamery.	To whom Paid.
Paid $100.00.	
1 St. Anaclet (Rimouski), Que.	Ovide Couture, Sec.
2 Baden, Ont.	Silver Spring Creamery.
3 Birch Hills, Saskatchewan.	H. A. Wilson, Sec.
4 Cedar Hall (Rimouski), Que.	J. Bte. Anstil.
5 Fairfax (Stanstead), Que.	L. Marion, Sec.
6 Griffin (Stanstead), Que.	W. H. Brevoort, Sec.
7 Honoréville (Iberville), Que.	Edgar Tessier.
8 St. Joseph du Lac (Two Mountains), Que.	H. J. Lafrance.
9 St. Leon (Maskinongé), Que.	Jos. Fleury, Sec.
10 St. Luc (Matane), Que.	Gendreau & Imbealt.
11 North Stukely (Shefford), Que.	Louis Fleurant.
12 Orono, Ont.	McFeeters & Ball.
13 Rimby, Alberta	John L. Beeley, Sec.
14 Sutton (Brome), Que.	Nap. Menard.
15 Trois Pistoles (Rimouski), Que.	Alexis Coté, Sec.
16 Warwick (Drummond), Que.	Jos. Binette.
17 Wickham (Drummond), Que.	J. J. Vanasse.
18 St. Zotique (Soulanges), Que.	Alph. E. Verronneau.
Paid $50.00.	
1 L'Assomption (L'Assomption), Que.	Charles Gravel.
2 St. Grégoire (Nicolet), Que.	J. A. Toutant.

SUMMARY OF BONUSES PAID SINCE 1897.

398 creameries have received the full bonus, $100.	$39,800
145 creameries have received $75.	10,875
140 creameries have received $50.	7,000
	$57,675

ICED CAR SERVICES.

The various iced car services were again operated by the railways under arrangements made on behalf of the department, by the Dairy and Cold Storage Commissioner, as follows:—

1. Iced butter cars were run weekly over specified routes to Montreal and Quebec from May 17 to October 16, to pick up small lots of butter at way stations. This service permits shippers of small lots to receive the full advantages of shipment in iced cars at regular tariff rates. Without such an arrangement the shipper would have either to pay the full carload rate on a small quantity, or hold his butter until a carload had been accumulated. The department guarantees two-thirds of the earning of a car from starting point to destination, plus $4 per car for icing. In a great many instances the cars are well loaded, so that there is no claim on the department under the guarantee. The total cost in 1909 for the iced butter car service on fifty-eight routes, covering all the railways, was $8,887.42.

2. Iced cars for the carriage of cheese in carloads are supplied by the railways on demand of shippers. The department agreed to pay icing charges on a limited number of these cars, to the extent of $5 per car, during a period of ten weeks beginning July 5, and ending September 11. The cost of the iced cheese car services on all railways was $3,599.

3. A service of iced cars for the carriage of fruit intended for export in cold storage was also provided on the same terms as for the cheese cars, at a cost of $659.

The reports of the refrigerator car inspectors, giving temperature of products, &c., will be found in Part II., pages 113 to 121.

COLD STORAGE CHAMBERS RESERVED FOR FRUIT.

Shippers desiring to export fruit in cold storage to Great Britain have found a difficulty in securing refrigerated space for small quantities. The smallest chambers on the ships run from 2,000 to 4,000 cubic feet capacity, and the steamship agents not unreasonably decline to open a chamber unless there is sufficient freight offered, of the right class, to occupy a fair proportion of the space.

In 1908 the Minister authorized the Dairy and Cold Storage Commissioner to have a small chamber reserved for fruit on four different sailings, the Department to guarantee the earnings on the full space of the chamber. The experiment was repeated in 1909, but owing to the small crop of early apples and pears, the shipments were comparatively small. Chambers were reserved on the steamers sailing from Montreal to London and Glasgow, as follows:—

Steamer.	Line.	Sailing Date.	Destination.
Hesperian	Allan	21st August	Glasgow.
Cairnrona	Thomson	28th "	London.
Grampian	Allan	4th September	Glasgow.
Hurona	Thomson	11th "	London.
Hesperian	Allan	18th "	Glasgow.

The quantity of fruit shipped in these chambers was as follows:

*Hesperian.....Nil fruit
Cairnrona.....225 boxes pears
Grampian.....199 boxes pears, 247 barrels apples
Hurona.....25 boxes pears
Hesperian.....100 boxes pears, 81 barrels apples.

COLD STORAGE ON STEAMSHIPS.

It has been our custom for several years to publish in the annual report of the Branch the details of the cold storage space on the different steamships sailing from Montreal and Quebec, as a sort of directory for the benefit of shippers. There have been a number of changes since our last report was published, and for that reason the information is repeated with the necessary revision. It is needless to say that the cold storage space is ample for all the traffic offered. As a matter of fact, since the decline in the butter shipments a large part of the space is not used.

* As the chamber on this boat was not used, the Department was not asked to pay the amount of the guarantee.

NUMBER of Sailings of Steamers from Montreal and Quebec, with details of Cold Storage Accommodation, Season 1909.

ALLAN LINE.

Name of Steamer.	Number of Sailings.	Number of Chambers.	Capacity in Cubic Feet.
To Liverpool—			
Tunisian	7	4	21,650
Victorian	7	5	17,260
Virginian	7	4	12,440
Corsican	8	5	24,270
To London—			
Sicilian	5	4	17,980
Hibernian	2	3	7,956
Ontarian	3	4	16,843
Pomeranian	5	2	8,056
Sardinian	5	2	9,628
Corinthian	4	4	16,722
To Glasgow—			
Pretorian	7	6	25,270
Ionian	8	6	13,553
Grampian	7	5	23,400
Hesperian	7	5	23,400

CANADIAN PACIFIC LINE.

To Liverpool—			
Lake Erie	5	4	21,700
Empress of Britain, from Quebec	7	3	29,700
Empress of Ireland, from Quebec	7	3	29,700
To London—			
Montrose	2	4	23,000
Montfort	5	3	24,700
To Bristol—			
Montcalm	5	1	15,340
Monmouth	5	2	15,400

DOMINION LINE.

To Liverpool—			
Laurentic	6	4	27,240
Megantic	5	4	27,240
Welshman	1	4	46,920
Dominion	6	4	40,985
Canada	6	4	47,915
Ottawa	4	2	27,410
To Bristol—			
Manxman	4	3	54,480
Turcoman	5	4	38,440
Englishman	5	4	37,600
Cornishman	4	2	28,560

DONALDSON LINE.

To Glasgow—			
Parthenia	6	4	16,000
Athenia	6	4	16,122
Lakonia	6	4	14,526
Cassandra	6	3	7,770

NUMBER of Sailings of Steamers from Montreal and Quebec, &c.—*Concluded.*

THOMSON LINE.

Name of Steamer.	Number of Sailings.	Number of Chambers.	Capacity in Cubic Feet.
To London—			
Cervona	5	4	15,320
Devona	5	3	21,953
Hurona	5	4	20,487
Iona	5	4	18,472
Cairnrona	6	6	20,424

MANCHESTER LINERS.

To Manchester—			
Manchester Trader	5	1	3,000

ELDER-DEMPSTER LINE.

To South Africa—			
Canada Cape	2	5	66,000
Bendu	1	2	9,000
Melville	2	4	59,647
Benin	1	1	9,000

SUMMARY.

——	Number of Sailings.	Cubic Feet.
To Liverpool	76	2,067,510
To London	57	984,853
To Glasgow	53	939,422
To Bristol	28	866,060
To Manchester	5	15,000
To South Africa	6	269,294
Totals	225	5,142,139

COOLED AIR SERVICE, 1909.

The following steamships with cooled air service sailed from the port of Montreal during the season of 1909:—

Name of Steamer.	No. of Sailings.	Cubic feet space.
Allan line—		
Pomeranian	5	26,000
Hibernian	2	45,540
Ontarian	3	19,000
Sardinian	5	17,600
Canadian Pacific line—		
Montcalm	5	18,668
Monmouth	5	19,413
Dominion line—		
Canada	6	46,904
Turcoman	5	40,491
Englishman	5	18,617
Manxman	4	41,585
Thomson line—		
Iona	5	80,178
Cervona	5	97,530
Hurona	5	79,707
Devona	5	97,574
Cairnrona	6	76,739

SUMMARY.

	No. of sailings.	Cubic feet space.
To Liverpool	6	281,424
To London	41	2,601,459
To Bristol	24	652,435
Totals	71	2,535,318

THERMOGRAPHS PLACED IN STEAMSHIPS.

From Montreal and Quebec.	Where Placed in Steamship.		
	Cold Storage.	Cooled Air.	Ordinary Storage.
Placed with	Times.	Times.	Times.
Butter and lard	7		
Butter and cheese	1		1
Butter	27		
Cheese	6	19	103
Fruit	11		
Meats	32	4	3
Frozen salmon	5		
Butter and meats	13		
Cheese and meats	10	28	79
Apples and meats	7	1	2
Apples and cheese	1	4	18
Apples and pears	14		
Apples	2		53
Total	136	56	259
From Halifax—			
Apples	1		19
Apples and cheese	1		2
Grand total	138	56	280

BUTTER TEMPERATURES ON BOARD STEAMSHIPS.

During the season of navigation of 1909 the cargo inspectors at Montreal tested the temperatures of 368 packages of butter as these were being loaded into the steamers, each package being marked so as to enable the inspector at the port of discharge to get the temperature of the same package as soon as it was unloaded from the steamer. The temperatures for each line have been averaged by the season, and the results are shown in the following table:—

Steamship Line.	Number of Sailings with Butter.	Number of Packages Tested.	Average Temperature at Montreal.	Average Temperature at Port of Discharge.	Increase in Temperature.	Reduction in Temperature.
			Deg.	Deg.	Deg.	Deg.
Montreal to Bristol—						
C.P.R	3	40	29·2	19·8	.....	9·4
White Star—Dominion	10	108	32·3	21·9	.....	10·4
General average	.....	.....	31·5	21·3	.....	10·2
Montreal to Glasgow—						
Allan	12	62	33·9	21·2	.....	12·7
Donaldson	4	17	27·2	21·6	.....	5·6
General average	.....	.....	32·4	22·7	.....	9·7
Montreal to Liverpool—						
White Star—Dominion	6	21	35·5	19·2	.....	16·3
Allan	4	22	39·7	31·9	.....	7·8
General average	.....	.....	37·6	25·7	.....	11·9
Montreal to London—						
Thomson	12	82	36·9	22·9	.....	14·0
Allan	1	5	27·4	23·2	.....	4·2
General average	.....	.....	36·3	22·9	.....	13·4
Montreal to Manchester—						
Manchester Liners	2	11	28·8	33·5	4·7	.....

SHIPMENTS of Perishable Products in Cold Storage and Cooled Air from the Port of Montreal, Season 1909 (U.S.A. products included).

	In Cold Storage.	In Cooled Air.
Apples (bbls.) Canadian	5,138	2,447
" (boxes) "	3,304	.....
Butter (pkgs.) "	39,218	79
Cheese (boxes) "	.....	268,470
Meats " "	10,906	10,689
" " U.S.A.	43,107	3,689
Lard (pkgs.) "	16,026	.....
Tender fruits (boxes) Canadian	10,846	.....
" " " U.S.A.	27,274	.....
Beef (quarters) Canadian	341	.....

Loading Nova Scotia Apples in Vans for Market, Victoria docks, London.

Landing and Warehousing Nova Scotia Apples from River Barges, London.

SESSIONAL PAPER No. 15a

SHIPMENTS of Perishable Products in Cold Storage and Cooled Air from the Port of Montreal, Season 1909 (U.S.A. products included).

	In Cold Storage.	In Cooled Air.
Apples (boxes) Canadian	.....	51
Cheese " "	.....	4,683
Meats " "	212	738
" " U.S.A.	5,619	4,192

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DEPARTMENT OF AGRICULTURE
CANADA.

REPORT

OF THE

VETERINARY DIRECTOR GENERAL

AND

LIVE STOCK COMMISSIONER

J. G. RUTHERFORD

For the Year ending March 31, 1909

PRINTED BY ORDER OF PARLIAMENT

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1911

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REPORT OF THE VETERINARY DIRECTOR GENERAL AND LIVE STOCK COMMISSIONER.

HEALTH OF ANIMALS AND LIVE STOCK BRANCHES,
OTTAWA, March 31, 1909.

SIR,—I have the honour to present my annual report as Veterinary Director General and Live Stock Commissioner for the year ending March 31, 1909:—

HEALTH OF ANIMALS.

Although fortunately no serious outbreak of disease has, during the past year occurred in the Dominion, the officers of this Branch have, nevertheless, been kept busily engaged not only in the performance of their regular duties, but in safeguarding the live stock of the country from what has been perhaps, the most grave danger which has ever threatened it.

The recent serious outbreak of foot and mouth disease in the United States, and especially in those portions of New York and Michigan which lie in immediate proximity to the Canadian frontier, created a situation undoubtedly more dangerous to our live stock industry than any previously experienced in the history of the country. It is therefore, especially in view of the highly contagious nature of this disease and the fact that it is very readily transmissible by many indirect channels, a matter for congratulation that the officers of this Branch were successful, by the adoption of the most stringent quarantine measures and unremitting efforts in their enforcement, to entirely prevent its introduction to the Dominion.

When it is remembered that the disease existed in the cities of Detroit, Michigan, and Buffalo, New York, as well as in the country surrounding these centres, and that one very serious outbreak occurred on Grand island, in the Niagara river, the efficiency of our quarantine service must, I think, be recognized and duly appreciated.

I may add that these gratifying results could not possibly have been secured but for the existence of the efficient veterinary sanitary service, to the creation of which much strenuous effort has been devoted during recent years.

The existence of the disease in the State of Pennsylvania was first reported to the British authorities during my second visit to Rome as the Canadian delegate of the International Institute of Agriculture. Fortunately I was at this time in close touch with the British delegate, Sir Thomas Elliott, the official head of the British Board of Agriculture and Fisheries, who naturally was kept fully informed by wire from London of everything which was taking place.

You will recollect that the first reports indicated Toronto as the original place of origin of the infection on this continent, and it was only because I was able to disprove this statement and to promise absolute safety as regards the health of Canadian cattle that our export trade with Great Britain was permitted to continue.

In order, however, to secure this concession it was necessary to allay the anxiety of the British authorities by agreeing to make a close farm to farm inspection of all the territory in Ontario which might be considered as tributary to Buffalo and Detroit.

Full instructions with regard to the enforcement of quarantine and the disposition of our inspection staff were cabled by me from Rome, and it is difficult to speak

too highly of the energetic and effective manner in which these instructions were carried out by Dr. Hilton and the other officers of the Branch.

As soon as the facts became known the entry to Canada of live stock of any kind which had originated or passed through the States of New York, Michigan, Pennsylvania, New Jersey, Maryland, and Delaware, was strictly prohibited, as was also that of hay, straw, or other fodder or manure from these states.

These restrictions have been gradually modified as the disease has been brought under control by the United States authorities, and it will in all probability be quite safe to abrogate them entirely in the near future.

In order to avoid all possibility of suspicion being attached to Canadian cattle, their shipment from United States ports or on vessels which had, within twenty-one days previous, called at any port in an infected State, was entirely forbidden. Vessels carrying United States cattle from ports on the Atlantic coast were also prohibited from entering Canadian ports. These restrictions have now been revoked.

The policy of slaughter and compensation adopted by the United States authorities was undoubtedly well advised, as had the methods formerly in vogue been proceeded with, the disease would almost certainly, under modern conditions of transportation, have spread rapidly over the country, in which event it would have been practically impossible to prevent its introduction sooner or later to the Dominion. It is safe to say that never in the history of veterinary sanitation has so serious and widespread an outbreak of a highly infectious disease been dealt with so speedily and effectively as in this instance.

GLANDERS.

Successful results continue to attend our campaign against glanders, and the indications are that with the present policy it will only be a comparatively short time until this disease is under absolute control.

The number of horses submitted to the mallein test during the year was very much greater than ever before, although the number of those destroyed has diminished by 343 head, while the expenditure in compensation is nearly thirty thousand dollars ($30,000) less.

The disease is still occasionally introduced by horses from the United States, but the present policy under which all horses unaccompanied by satisfactory mallein test charts signed by the officers of the United States Bureau of Animal Industry are tested by our inspectors at the boundary, is certain to greatly reduce this danger in future.

During the rush season of immigration which occurs every spring great difficulty is experienced in enforcing this policy in such a manner as to make it effective without at the same time seriously delaying incoming settlers at boundary points. The numbers arriving are occasionally so large as to make it impossible to detain them all, and a certain proportion of horses are therefore almost perforce, permitted to proceed to destination points to be tested after their arrival there. Such horses are followed up and tested as soon as possible, but as settlers not unfrequently change their original locations there is in this condition a certain element of risk, which I hope to be able to eliminate in the near future.

In the Eastern Provinces and in British Columbia the disease is apparently under satisfactory control, while great improvement also is noticeable in Manitoba. In Saskatchewan, however, and to a less extent in Alberta, there is still much energetic work to be done before the results can be regarded as entirely satisfactory.

MANGE.

It has been found necessary to alter materially the policy of the Branch in dealing with mange among cattle in that portion of Alberta and Saskatchewan where this disease exists. Through the enforcement during recent years of compulsory dipping

orders covering the whole area under the restriction, many districts have been entirely cleaned up. Owners in such districts naturally object to being compelled to dip their healthy herds, and after consultation with the stock men, it was deemed advisable to substitute for the policy of compulsory treatment of cattle within the area, one of close inspection and the adoption of prompt and energetic measures in regard to all animals found to be affected, as well as all contact cattle. While the disease is by no means entirely eradicated it is under better control than at any time since its introduction from the United States fifteen years ago.

DOURINE.

Cases of dourine or maladie du coit are still occasionally discovered in the horse breeding districts in Southern Alberta and South-western Saskatchewan. This disease is of an insidious and erratic character, and from the great difficulty attending its diagnosis, is exceedingly hard to detect especially in mild or incipient cases. A close watch is, however, being kept over the breeding operations in the districts where it has been found, and every suspected animal is quarantined and kept under close observation, while those in which the symptoms are sufficiently well marked are promptly destroyed. No horses are allowed to be moved from the infected area without first undergoing a careful veterinary examination, and this precaution has apparently been effective in preventing its introduction into other districts.

The branch laboratory in connection with the quarantine station at Lethbridge, Alberta, is still being maintained for the purpose of continuing research work with the object of discovering either a curative agent, an effective prophylactic, or a reliable means of diagnosis.

Although much earnest effort has been bestowed on this work by Dr. Watson, the officer in charge, no definite results have been secured since the identification last year of the specific causal agent, the trypanasoma equiperdum then discovered for the first time on this continent. The various reports of Dr. Watson covering his work in relation to this and other diseases, which are printed as an appendix to this report, will be found most interesting.

REDWATER.

During the past year Dr. Thomas Bowhill, F.R.C.V.S., a veterinary pathologist of high standing, has been engaged in investigating the nature of the disease known as redwater, which has, ever since settlement took place, been responsible for serious losses among cattle in some few districts in British Columbia.

As a rule maladies of this class are due to the presence in the blood of a specific parasite generally transmitted through the light of some species of tick. These ticks infest the skin of the animal and act as intermediary hosts to the blood parasite which causes the disease.

Dr. Bowhill is of opinion that the causal agent of the redwater seen in British Columbia is a blood parasite transmitted in the manner described above, but the proofs so far obtained are not sufficiently definite to warrant any official action based on this hypothesis. The investigation will be continued until the nature of the disease is satisfactorily demonstrated.

HOG CHOLERA.

I am pleased to be able to report that, although several isolated outbreaks of hog cholera took place in Ontario during last summer, those districts in the western peninsula of that province, where the disease was at one time firmly established, have been entirely freed from infection. Except in one case, where the origin of the outbreak could not be ascertained, the cases which have occurred in Ontario are directly traceable to the transit trade in United States hogs.

A few cases have occurred in British Columbia, but in these also the infection was undoubtedly brought in from the United States.

The compensation paid on account of hog cholera is slightly larger than it has been for some years back, the increase being due to the fact that the herds affected were much larger than in ordinary cases, and that one of them was composed altogether of valuable pure bred animals.

SHEEP SCAB.

A few outbreaks of sheep scab were discovered and dealt with early in the year but the disease was in all cases very limited, and, as a result of the energetic measures adopted, was stamped out with comparative ease.

Everything possible has been done in the way of tracing up and subjecting to treatment all sheep known or suspected to be in contact with the diseased animals, but, with the exception of one small flock in the county of Simcoe, which is still being held for treatment, no further cases have been discovered.

RABIES.

I regret to have to report that several outbreaks of rabies have occurred in the province of Ontario during the past year, and that not only dogs but a number of other animals have been affected. Several human beings were also bitten, but the prompt adoption of the Pasteur treatment has been successful in arresting the progress of the malady in several instances, no fatal human cases having been reported.

The disease undoubtedly was introduced from the State of New York, where it has existed for many years, and where it has been of late even more than usually prevalent.

Rabies first made its appearance in Ontario nearly two years ago, being traced to a dog which crossed the Niagara river at the Suspension Bridge, bit several animals owned in Queenston, Ontario, and returned to the United States without having aroused suspicion of its being affected. Somewhat later an outbreak at Red Deer, Alberta, was traced to a dog taken from Hamilton, Ontario, where the existence of the disease was discovered a short time afterwards. The infection is unquestionably spreading throughout the western peninsula of Ontario, and it will probably be necessary in the near future to insist on the muzzling, or detention, of all dogs within the area in which the disease is known to exist in order to prevent its extension throughout the Dominion.

By the enforcement of strict muzzling orders, and the adoption of an inflexible regulation requiring the isolation for six months of all dogs imported, rabies has been entirely eradicated from Great Britain. While in view of our lengthy land boundary, easily crossed not only by dogs, but by wild animals as well, it is practically out of the question to establish an effective quarantine against the United States, it should, I think, be possible to control the present outbreak by enforcing strict muzzling regulations and prohibiting the movement of dogs from the infected district.

ANTHRAX.

Occasional outbreaks of anthrax have been reported from various localities, but none of these have been of an extensive character.

The system of preventive inoculation now generally adopted is apparently proving successful in controlling the ravages of this most malignant disease. Vaccines for anthrax and black-quarter prepared in the Biological Laboratory of this branch are playing an important part in the control of this disease. These vaccines are supplied to the public at the nominal price of five cents per dose, and although the

demand for anthrax vaccine is fortunately very limited, the vaccine for black-quarter is sent out in large quantities, especially to those districts where that troublesome malady has until recently been prevalent.

The valuable privilege which the stock owners of the country enjoy in being able to obtain reliable vaccine at a nominal price, is evidently appreciated, if one may judge by the number of doses sent out.

BIOLOGICAL LABORATORY.

The Biological Laboratory is also to be credited with a considerable annual saving to the department through the manufacture of mallein and tuberculin. The large quantities of these preparations now required in the work of the branch would, if purchased from dealers, necessitate a very considerable annual expenditure, while their reliability would be much less certain than at present. The public also derive much benefit from the use of reliable preparations by our officers in testing horses and cattle, as also from the reports furnished in regard to pathological specimens forwarded to the laboratory for diagnostic purposes.

TUBERCULOSIS.

In regard to bovine tuberculosis there is little new to report. The control of this disease is undoubtedly the most serious problem now confronting governmental authorities throughout the world. Although every phase of the subject has been carefully and consistently studied by the most highly trained and skillful scientists of every civilized country, no policy at once practical and effective has yet been promulgated.

At the International Congress on Tuberculosis held in Washington, D.C., September 28th, to October 5th, 1908, one section was specially devoted to bovine tuberculosis, but while many interesting papers were contributed, no definite conclusion was arrived at.

Under modern conditions, as regards the exchange and transportation of live stock, the disease is rapidly extending, and it goes without saying that action in the direction of securing its effective control and ultimate eradication will, ere long, be found absolutely necessary. I trust that in the near future it may be found possible to devise some means of securing a definite joint pronouncement in favour of a sound and sensible policy, which may be adopted by governmental authorities, with reasonable hope of success.

The open air treatment with bovine tuberculosis, referred to in previous reports as having been in progress since December, 1905, has now been finished, and a full report of the results in detail is published herewith. The objects of this experiment, which was purely of a practical nature, were three fold: firstly, to ascertain the effect of open air treatment on the diseased cattle themselves; secondly, to ascertain to what extent healthy cattle kept in contact with diseased cattle under open air conditions, are subject to infection; thirdly, to ascertain what percentage of healthy calves it is possible to rear from diseased cows kept without any precautions under open air conditions.

The data obtained indicate that open air life is highly beneficial to tuberculous cattle and that the danger of transmission to adult cattle kept in contact under these conditions is relatively slight. On the other hand, the percentage of healthy calves raised by the diseased cows is, as was to be expected, comparatively small.

QUARANTINE.

The old quarantine station at Point Edward has, since the construction of the Sarnia Tunnel, been found to be very inconvenient on account of its distance from the point at which animals entering Canada cross the St. Clair river. The lease of

this property has, therefore, been cancelled and the buildings disposed of to the best advantage. Much of the material has been utilized in the construction of new and more convenient quarantine buildings in close proximity to the Tunnel station.

A quarantine station has been established at Big Muddy, Sask., while the following places have been added to the list of inspection stations:—

Edmundston, New Brunswick,
Aroostook, New Brunswick,
Debec, New Brunswick,
St. Leonards, New Brunswick,
Stanstead, Quebec.

STAFF.

The following changes in the personnel and disposition of the staff have taken place during the year just past:—

On May 1, it was found necessary to recall to head office, Dr. Hilton, who had been since June, 1907, stationed at Regina engaged in organizing the Field Inspection Service of the Branch in Saskatchewan and Alberta.

The work in Saskatchewan was placed in charge of Dr. A. G. Hopkins, while at the same time Dr. J. C. Hargrave was appointed Chief Veterinary Inspector for Alberta, with headquarters at Medicine Hat.

With the coming into force of the Civil Service Amendment Act on September 1, 1908, Dr. Hilton became Chief Veterinary Inspector, while Dr. Moore received the rank of Chief Travelling Inspector.

In Saskatchewan Dr. W. H. Mustard, Dr. A. G. Acres and Dr. G. H. Cottrill were appointed as veterinary inspectors, and the resignation of veterinary inspector Mitchell of North Portal was regretfully accepted.

In Alberta Dr. V. V. Christie was appointed a veterinary inspector, and located at Twin Lakes, and Mr. T. M. Morgan was engaged as a travelling inspector in the mange infected area.

In Manitoba Dr. J. B. Still was appointed a veterinary inspector under Dr. C. D. McGilvray.

Dr. William Lawson of the Rainy River district being transferred to the Meat Inspection Division of the service, Dr. A. McTaggart was appointed boundary inspector in his stead. The resignation of Dr. W. Laidlaw, an assistant pathologist at the Biological Laboratory of the Branch, was accepted on March 27, 1909.

In May, 1908, Dr. S. H. Ward having been offered re-engagement as secretary of the Live Stock Sanitary Board of Minnesota at a largely increased salary, resigned his position as chief of the Meat Inspection Division. Dr. Ward's departure was a distinct loss to the branch, as his knowledge and ability had proved of great value in the organization of the Meat Inspection Service in its initial stages. Under the circumstances, however, it would have been unreasonable to expect him to remain. He was succeeded, as Chief of the Meat Inspection Division, by Dr. Robert Barnes, formerly travelling inspector, Dr. E. A. Bruce being promoted to the place thus left vacant.

The following veterinary inspectors were added to the Meat Inspection staff during the year:

Dr. M. Barker,
Dr. D. R. Bone,
Dr. G. S. Brownridge,
Dr. A. E. Cameron,
Dr L. J. Demers,
Dr. A. R. Douglas,
Dr. J. R. English,
Dr E. R. Farewell,
Dr. A. J. G. Hood,
Dr. J. C. Jones,
Dr. William Lawson, (Transferred from Field Division.)
Dr. C. McConachie,
Dr. R. D. Orr,
Dr. A. C. Ramsay,
Dr. J. H. Shonyo.

Several additions were made to the clerical staff, while a number of lay inspectors were also appointed.

In the Live Stock Branch Mr. G. W. Clemons and Mr. T. H. Mason were added to the staff of inspectors engaged in conducting the work of the Canadian Record of Performance.

My own time has, as usual, been very fully occupied.

Early in May, acting under your instructions, I proceeded to Rome as Delegate for Canada to the Permanent Committee of the International Institute of Agriculture. A full report of this, as well as of the second visit paid to Rome in November, is published herewith.

While in Europe I visited the French National Veterinary School at Alfort near Paris where I was very kindly received by the Director in control, Professor G. Barrier. I discussed with him the question of veterinary education in Quebec with a view to promoting, if possible, the introduction of the modern French veterinary teaching to the whole profession in Canada through the medium of the Laval School, which is admirably adapted for the task.

In England I took up with the officers of the British Board of Agriculture several questions of mutual interest, and in this connection desire to place on record my grateful appreciation of the many courtesies extended to me by these gentlemen. I also visited the Royal and Highland Shows, the interval between these events being occupied in an earnest and searching inquiry into the conditions under which the marketing of Canadian cattle is carried on in Liverpool, London, Glasgow, and Manchester. In this work I was assisted by Mr. McHugh, who was temporarily employed by the Live Stock Branch to investigate fully all matters affecting the handling and transportation of Canadian export live stock. Mr. McHugh has furnished a special report, which is printed as an appendix hereto.

I returned to Ottawa early in August and after a busy fortnight in the office, I attended the Annual Meeting of the American Veterinary Medical Association, which was held in Philadelphia, September 8th to 11th, 1908. At this meeting I had the honour of being elected President for the year 1908-1909.

Having been appointed by you as an official delegate I attended the International Congress on Tuberculosis held at Washington, D.C., September 28th to October 5th, 1908. At this Congress it fell to my lot to read a paper in which the difficulties to be encountered in dealing with the disease were fully set forth. This paper has, I may say, been extensively republished and reviewed, not only in America, but in other parts of the world, and its conclusions have been endorsed by most of those who have studied the subject from a practical point of view.

On October 26th I again left for Rome in my capacity as Canadian delegate to the International Institute of Agriculture.

On my return journey while in London, I had the privilege of being present at an interview between yourself and the Right Hon. John Burns, President of the Local Government Board, at which the regulations affecting the admission to the United Kingdom of Canadian meats and meat products were discussed. Later I had several interviews on the same subject with the permanent officials entrusted with the promulgation and enforcement of the regulations in question.

Reaching Ottawa again on December 27 I found the situation with regard to the protection of the Canadian frontier against the introduction of Foot and Mouth Disease still very acute, and it was therefore necessary for me to remain almost constantly on duty at headquarters.

I, however, attended as Live Stock Commissioner, a number of the annual meetings of the various Breed Associations, among others that of the French Canadian Stock Breeders of the Province of Quebec.

ANTHRAX.

The following outbreaks were reported and dealt with during the year:—

Province.	Outbreaks.	Animals died.
Quebec	2	7
Ontario	7	12

In Quebec, the two outbreaks were in the Three Rivers and Richmond district, respectively.

In Ontario six outbreaks were in Durham county and one in Dundas.

Four hundred and sixty-four doses of anthrax vaccine were supplied from the Biological Laboratory.

BLACK QUARTER.

Eight thousand and sixty-four doses of Blackleg vaccine were shipped from Ottawa, in addition to that sold by druggists throughout the Dominion.

RABIES.

One hundred and sixty-three premises were quarantined on account of the prevalence of rabies in the adjacent districts, distributed as follows:—

District.	Premises Quarantined.
Ontario—	
Haldimand	8
Brant	3
Norfolk	39
North Oxford	3
Centre York	2
Welland	1
South Waterloo	1
Wentworth	6
South Oxford	1
Saskatchewan—	
Qu'Appelle	94
Alberta—	
Red Deer	5
	163

SHEEP SCAB.

In Ontario 226 animals on 15 premises were found to be affected with sheep scab, involving the quarantine of 749 sheep on 30 premises, distributed as follows:—

County—	Affected.	Quarantined.
Ontario	57	278
Simcoe	140	314
Lambton	27	133
Middlesex	2	24
	226	749

In British Columbia 1,187 sheep on three premises are in quarantine on suspicion of the existence of sheep scab.

MALADIE DU COIT.

Twenty-eight animals valued at $3,760 were slaughtered as being affected with this disease, at a cost of $2,506.54, distributed as follows:—

Saskatchewan—

District.	Suspected and Quarantined.	Slaughtered.
Maple Creek	44	5

Value, $600.
Compensation, $400.

Alberta—

District	Suspected and Quarantiued.	Slaughtered
Mayton	119	1
Medicine Hat	58	11
Pincher	..	4
Lethbridge	59	11
Calgary	1	1
	237	28

Value, $3,160.
Compensation, $2,106.64.

HORSE MANGE.

Province.	Outbreaks.	Animals affected.	Animals quarantined.
New Brunswick	1	3	3
Quebec	59	80	113
Ontario	3	7	12
Manitoba	12	41	65
Saskatchewan	33	110	185
Alberta	44	256	2,827
Total	152	497	3,205

1,256 horses were inspected on being presented for shipment from the quarantined area in Alberta and Saskatchewan.

CATTLE MANGE.

In Ontario two outbreaks of Cattle Mange were detected, one at Walkerville and the other by our boundary officer at Bridgeburg. In the latter case the animals were sent to an abattoir in Toronto for slaughter.

In Saskatchewan twenty-five bands of cattle were quarantined, involving the control of 6,280 cattle. Only 145 of these, however, were found to be affected.

In Alberta 620 bands of cattle were quarantined, involving the control of 181,971 cattle. Only 15,143 of these, however, were found to be affected.

Five thousand three hundred and ninety-six cattle were inspected on being presented for shipment from the quarantined area in Alberta and Saskatchewan.

One hundred and sixty-five thousand three hundred and sixty cattle were inspected in Winnipeg on arrival from points west thereof, all suspected animals (69) being forbidden export east.

TUBERCULOSIS.

Four hundred and thirty-eight cattle were tested for export, 27 of which reacted and 411 successfully withstood the test.

Two hundred and seventy-two cattle were tested on being imported into Canada, 9 of which reacted, 4 were classed as suspicious and 259 proved healthy.

Three thousand four hundred and forty-seven cattle were tested by private practitioners with tuberculin supplied by this department, 451 of which reacted, 47 were classed as suspicious and 2,949 proved to be healthy.

With regard to this general testing, it must be borne in mind that in many cases the existence of tuberculosis is suspected in a herd before tuberculin is applied for and the proportion of reactors cannot be cited as that obtained from indiscriminate testing.

All reactors were permanently earmarked by a veterinary inspector in cases where the owner did not voluntarily destroy them.

HOG CHOLERA.

ONTARIO.

Twenty-three outbreaks of Hog Cholera occurred in Ontario in which 1,500 hogs, valued at $11,891.25, were destroyed in the undermentioned counties, at a cost of $7,927.45.

Two hogs valued at $15.00 were also destroyed for purposes of examination at a cost of $9.99 but no evidence of Hog Cholera was found.

	No. of Outbreaks.	Hogs Destroyed.
County of Essex—		
South Sandwich Township	2	105
East Sandwich Township	1	29
County of Brant—		
Brantford Township	1	40
County of Oxford—		
Oxford Township	1	134
County of York—		
York Township	4	797
Scarboro Township	1	23
County of Nipissing—		
Waters Township	5	17
McKim Township	7	353
County of Simcoe—		
Nottawasaga Township	1	2
	23	1,500

BRITISH COLUMBIA.

Nineteen outbreaks of Hog Cholera occurred in British Columbia in which 381 hogs, valued at $2,978.20 were slaughtered in the following districts at a cost of $1,985.40.

	No. of Outbreaks.	Hogs Destroyed.
New Westminster District	15	279
Vancouver District	1	1
Kootenay District	1	72
Victoria District	2	29
	19	381

In Quebec 2 hogs valued at $40.00 were killed for diagnostic purposes at a cost of $26.66. No evidence of Hog Cholera was found.

The total number of hogs slaughtered throughout the Dominion as being affected with Hog Cholera, therefore, was 1,881, the value of which was $14,869.45 and the compensation paid $9,912.85.

GLANDERS.

DOMINION.

981 { 39 killed on inspection; 820 " 1st test; 113 " 2nd "; 8 " 3rd "; 1 " 4th " } Valued at $110,081.50; At a cost of $73,386.88.

Three hundred and eighty-one showed clinical symptoms.

Twenty thousand four hundred and one horses were tested with mallein, of which 942 reacted and were destroyed. Of the 942 reactors 342 showed clinical symptoms of Glanders at or during the test.

Four hundred and forty-two horses are under control for retest.

Of the above 981 horses slaughtered, 82 were killed without compensation as being diseased when imported into Canada.

PRINCE EDWARD ISLAND.

One horse was tested and found to be healthy.

NOVA SCOTIA.

Twenty-three horses were tested and found to be healthy.

NEW BRUNSWICK.

Ninety-two horses were tested and found to be healthy.

QUEBEC.

81 { 10 killed on inspection; 9 " 1st test; 2 " 2nd " } Valued at $10,610, at a cost of $7,073.28.

Forty-five showed clinical symptoms.

Four hundred and ninety-one horses were tested with mallein of which 71 reacted and were destroyed.

Of the 71 reactors 35 showed clinical symptoms of glanders at or during the test.

Five horses are under control for retest.

Of the 81 horses slaughtered in Quebec

81	2	were in the district of	Richelieu,
	6	" "	Quebec,
	2	" "	Drummond,
	4	" "	Terrebonne,
	1	" "	Montreal,
	40	" "	Labelle,
	1	" "	St. Johns and Iberville,
	2	" "	Wright,
	1	" "	Joliette,
	3	" "	Montcalm,
	1	" "	Jacques Cartier,
	1	" "	Lotbiniere,
	1	" "	Bellechasse,
	3	" "	Yamaska,
	1	" "	Beauce,
	7	" "	Berthier.
	3	" "	Maskinonge,
	1	" "	Charlevoix,
	1	" "	Dorchester.

ONTARIO.

71	11	killed on	inspection	Valued at $8,785; at a cost of $5,856.62.
	57	"	1st test.	
	3	"	2nd "	

Forty showed clinical symptoms.

Six hundred and eighty-one horses were tested with mallein, of which 60 reacted and were destroyed. Of the 60 reactors 29 showed clinical symptoms of glanders at or during the test.

Two horses are under control for retest.

Of the 71 horses slaughtered in Ontario—

71	47	were in the district of	Thunder Bay and Rainy River.
	2	" "	Grenville.
	1	" "	York, North.
	6	" "	Halton.
	7	" "	Hastings, West.
	5	" "	Peterborough, East.
	1	" "	Middlesex, North.
	1	" "	Russell.
	1	" "	Peterborough, West.

MANITOBA.

124	4	were killed on	inspection	Valued at $13,957.50; at a cost of $9,304.91.
	100	"	1st test	
	17	"	2nd "	
	2	"	3rd "	
	1	"	4th "	

Fifty-one showed clinical symptoms.

Four thousand eight hundred and fifty-nine horses tested with mallein, of which 120 reacted and were destroyed.

Of the 120 reactors 47 showed clinical symptoms of glanders at or during the test.

Sixty-seven horses are under control for retest.

Of the 124 horses slaughtered—

124	5	were in the electoral district of	Winnipeg.
	12	" "	Macdonald.
	15	" "	Provencher.
	20	" "	Dauphin.
	24	" "	Souris.
	26	" "	Marquette.
	9	" "	Lisgar.
	7	" "	Selkirk.
	6	" "	Portage la Prairie.

SASKATCHEWAN.

463	12	killed on inspection	Valued at $54,501; at a cost of $36,333.60.
	401	" 1st test	
	48	" 2nd "	
	2	" 3rd "	

One hundred and fifty-five showed clinical symptoms.

Seven thousand eight hundred and ninety-eight horses were tested with mallein, of which 451 reacted and were destroyed.

Of the 451 reactors 143 showed clinical symptoms of glanders at or during the test.

One hundred and seventeen horses are under control for retest.

Of the 463 horses slaughtered—

463	115	were in the district of	Assiniboia.
	14	" "	Battleford.
	16	" "	Humboldt.
	39	" "	Mackenzie.
	135	" "	Moosejaw.
	39	" "	Prince Albert.
	44	" "	Qu'Appelle.
	38	" "	Regina.
	5	" "	Saltcoats.
	18	" "	Saskatoon.

ALBERTA.

223	2	killed on inspection	valued at $19,993.00	
	179	" 1st test		
	40	" 2nd "	at a cost of $13,288.52	
	2	" 3rd "		

Eighty-five showed clinical symptoms.

Three thousand six hundred and seventy-three horses were tested with mallein of which 221 reacted and were destroyed.

Of the 221 reactors 83 showed clinical symptoms of glanders at or during the test.

Two hundred and fifty-one are under control for retest.

Of the 223 horses slaughtered:

223	7	were in the district of	Strathcona,
	58	" " "	Red Deer,
	10	" " "	Calgary,
	80	" " "	Medicine Hat,
	33	" " "	Macleod,
	5	" " "	Victoria,
	10	" " "	Edmonton,

BRITISH COLUMBIA.

19 { 14 killed at 1st test; 3 " " 2nd "; 2 " " 3rd " } valued at $2,295.00. at a cost of $1,529.95.

Five showed clinical symptoms.

One thousand two hundred and seventy-three horses were tested with mallein of which 19 reacted and were destroyed.

Of the 19 reactors 5 showed clinical symptoms of glanders at or during the test.

No horses are under control for retest.

Of the 19 horses slaughtered:

19 { 14 were in the district of Yale-Cariboo; 4 " " " Kootenay; 1 " " " Vanvouver.

YUKON.

Twenty-six horses were tested with mallein and found healthy.

COMPARATIVE STATEMENT OF GLANDERS STATISTICS.

—	1904-05.	1905-06. (5 mos.)	1906-07.	1907-08.	1908-09.
Horses tested	4,899	3,957	8,687	11,428	20,401
Horses reacted	1,854	1,285	1,704	1,240	942
Horses killed	2 113	1,387	1,881	1,324	981
Clinical cases	932	561	954	635	381
Compensation paid	$147,851 43	$108,045 76	$142,057 07	$102,868 65	$73,386 88

DISEASED IMPORTS, 1908-09.

Port.	No. of Horses in infected Shipments.	No. of Shipments.	No. of Horses Diseased.	Country of Origin.	Action.
St. Johns, Que	1	1	1	U.S.	Returned.
Bridgeburg, Ont	1	1	1	"	"
Emerson, Man	150	27	42	"	28 returned 14 destroyed.
Gretna, Man	39	7	16	"	12 returned 4 destroyed.
Bannerman, Man	29	7	11	"	10 returned 1 destroyed.
Manitoba, general	24	6	7	"	5 returned 2 destroyed.
North Portal, Sask	339	53	81	"	21 returned 60 destroyed.
Wood Mountain, Sask	18	6	8	"	6 returned 2 destroyed
Willow Creek, Sask	8	2	2	"	Returned.
Big Muddy, Sask	8	4	4	"	"
Pendant d'Oreille, Alta	15	2	3	"	"
Coutts, Alta	54	12	22	"	"
Twin Lakes, Alta	24	6	9	"	8 returned 1 destroyed.
Rossland, B.C.	11	1	4	"	Returned.
Grand Forks, B.C.	28	3	7	"	"
Midway, B.C.	11	4	9	"	"
Myncaster, B.C.	9	5	8	"	"
Bridesville, B.C.	5	2	3	"	"
Osooyos, B.C.	21	1	2	"	"
Victoria, B.C.	1	1	1	"	"
Chopaka, B.C.	2	1	1	"	"
Total	798	152	242		

Two cattle were refused admission from the United States at Nelson, B.C., being affected with tuberculosis.

IMPORT TESTING.

Twelve thousand one hundred and seventy five horses were tested on arrival from the United States, distributed as follows:—

Entered at.	Number.	Entered at.	Number.
Charlottetown, P.E.I.	1	Bannerman	173
Halifax, N.S.	12	Man. General	54
Yarmouth	9	North Portal, Sask.	4881
Woodstock, N.B.	22	Wood Mountain	217
Aroostock Jct.	27	Big Muddy	72
McAdam Jct.	8	Willow Creek	180
Edmundston	10	Sask. General	2
Debec Jct.	1	Coutts, Alta.	329
St. Leonards	5	Pendant d'Oreille	81
St. John	8	Twin Lakes	114
N.B. General	9	Alta. General	1
Sherbrooke, Que.	149	Gateway, B.C.	51
St. Johns	61	Kingsgate	583
Athelstan and Dundee	87	Rossland	42
Cornwall, Ont.	5	Nelson	10
Prescott	28	Grand Forks	39
Morrisburg	4	Midway	32
Kingston	9	Myncaster	19
Toronto	9	Chopaka	36
Niagara Falls	42	Bridesville	38
Bridgeburg	115	Osoyoos	107
Windsor	101	New Westminster	177
Sarnia	73	Vancouver	71
Sault Ste. Marie	22	Victoria	66
Fort Frances	24	B.C. General	2
Rainy River	23	White Horse, Y.T.	25
Emerson, Man.	3062		
Gretna	847		12,175

IMPORT INSPECTIONS FROM EUROPE FROM APRIL 1ST, 1908 to MARCH 31ST, 1909.

	Horses.	Cattle.	Sheep.	Swine.	Goats.
Halifax, N.S.	7	..	3	..	..
St. John, N.B	242	8	110	..	5
Quebec, Que.	29	155	1,735	8	..
Sherbrooke	30	..	..	..	..
Montreal	544	..	..	..	..
Niagara Falls, Ont.	1	..	..	..	..
Total	853	163	1,848	8	5

One horse, 2 goats and 5 asses were also imported from the West Indies.

PURE BRED IMPORTS FOR THE YEAR ENDING MARCH 31ST, 1909.

HORSES AND ASSES.

Breed.	Great Britain.	United States.	Elsewhere.	Total.
Clydesdale	559	20	..	579
Percheron	10	139	46	195
Shetland	91	8	..	99
Thoroughbred	7	71	1	79
Standard Bred	..	72	..	72
Belgian	40	13	11	64
Hackney	38	3	..	41
Shire	33	3	..	36
Welsh Pony	28	..	..	28
Suffolk	13	..	..	13
French Coach	..	7	..	7
German Coach	..	4	..	4
Ponies	4	..	..	4
Mountain Pony	2	..	..	2
Polo Pony	2	..	..	2
American Coach	..	1	..	1
Saddle	..	1	..	1
Coach	1	..	..	1
Morgan	..	1	..	1
Hackney	1	..	..	1
York Pony	1	.	..	1
Donkey	1	.	..	1
Ass	1	..	..	1
Total	832	343	58	1,233

CATTLE.

Breed.	Great Britain.	United States.	Total.
Holstein	.....	93	93
Ayshire	59	3	62
Shorthorn	37	12	49
Jersey	27	16	43
Dexter Kerry	28	.....	28
Hereford	.....	27	27
Red Polled	.....	21	21
Polled Angus	12	6	18
Galloway	.....	4	4
Swiss	.....	2	2
Durham	.....	2	2
Aberdeen Angus	.....	1	1
Angus	.....	1	1
Guernsey	.....	1	1
Total	163	189	352

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PURE BRED IMPORTS FOR THE YEAR ENDING MARCH 31ST, 1909—*Continued.*

SHEEP.

Breed.	Great Britain.	United States.	Total.
Shropshire	1,304	14	1,318
Hampshire	185	1	186
Suffolk	45	54	99
Oxford	89	1	90
Cotswold	56		56
Lonk	55		55
Dorset	46		46
South Down	31		31
Leicester	8		8
Lincoln	8		8
Kerry Hills	7		7
Cheviot	5		5
St. Kilda	4		4
Shetland	2		2
Total	1,845	70	1,915

SWINE.

Breed.	Great Britain.	United States.	Total.
Hampshire		7	7
Berkshire	5		5
Durroc Jersey		4	4
Yorkshire	3		3
Poland China		3	3
Total	8	14	22

GOATS.

Breed.	Great Britain.	United States.	Total.
Nubian	5		5
Angora		9	9
Total	5	9	14

BUFFALOES.

Breed.	Great Britain.	United States.	Total.
Buffaloes		3	3

IMPORT INSPECTIONS FROM UNITED STATES AND NEWFOUNDLAND FROM APRIL 1ST, 1908, MARCH 31ST, 1909.

—	Horses.	Mules.	Cattle.	Sheep.	Swine.	Goats.	Buffalo.
Charlottetown, P.E.I.	1						
Halifax, N.S.	5						1 ass.
Yarmouth	14		10				
Sydney	101						6 caribou.
St. John, N.B.	45		2	1			
Debec Jct.	1						
Edmunston	10						
Woodstock	28						
St. Leonards	5						
McAdam Jct	32		1				
Aroostook Jct.	51		1				
St. Stephen	1						
Montreal, P.Q.	3						
St. Johns	371	5	6	14		5	3 buffalo.
Sherbrooke	276	5	56	38			
Athelstan and Dundee	91		206			1	
Cornwall, Ont.	10						
Prescott	151		3				
Cobourg	1						
Morrisburg	7		3				
Brockville			13				
Kingston	9		4				
Niagara Falls	441	7	6	28		8	
Bridgeburg	838	3	22	405			
Toronto	10						
Windsor	499	1	72	71	2		
Sarnia	198	11	11	221	7	5	4 camels.
Sault Ste Marie	22		9				
Fort Frances	34		6				
Rainy River	26		10				
Emerson, Man.	4,289	663	1,343	129	10	5	
Gretna, Man	1,047	172	483	115		2	
Bannerman	345	2	136				
Manitoba General	50		35	32			
North Portal, Sask.	8,247	446	4,778	27	17		
Big Muddy	228	3	10				
Wood Mountain	539	1	35		1		
Willow Creek	243						
Sask. General	5						
Pendant d'Oreille, Alta.	66		7				
Coutts	865	103	48	200		3	
Twin Lakes	520	7	11				
Alta. General	1						
Gateway, B.C.	200	2	2				
Kingsgate	735	20	109	505			
Nelson	11		176	785			
Rossland	45		181	285			
Grand Forks	49	2	80				
Midway	37		51				
Myncaster	26		19	35	25		
Bridesville	43		178	2,407			
Chopaka	46		9				
Osoyoos	262	1	17	200			
New Westminster and District	674	12	143	7,246	5	18	1 camel. 2 burros.
Vancouver	234	4	2	16,586			
Victoria	196	76	6	14,422	2		6 deer.
B. C. General	2						
Whitehorse, Y.T.	65		437	65			
Total	22,351	1,546	8,737	43,817	69	47	5 camels. 3 buffalo. 6 caribou. 6 deer. 2 burros. 1 ass.

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ANIMALS INSPECTED FOR EXPORT FROM APRIL 1ST, 1908—MARCH 31ST, 1909.

	Horses.	Cattle.	Sheep.	Swine.
Montreal to Great Britain	116	99,474	9,674	
Inspected at Montreal for shipment to Great Britain via Boston and Portland		21,342	13,230	
Montreal to South Africa			68	
Montreal to Newfoundland		65	85	
Halifax to Great Britain		2,982		
" St. Vincent		3	8	
" Jamaica	2	6	363	
" Bermuda	15	74	95	1
" Barbadoes	24			
" St. Pierre and Miquelon		14	4	19
" Newfoundland	1	46		
" Trinidad			82	
" St. Kitts and St. Lucia	1	3		6
St. John, N. B. to Great Britain	65	22,192	149	
Sydney to Newfoundland	314	685	8	4
Sydney to St. Pierre and Miquelon	2	129	377	15
Charlottetown, P.E.I. to Newfoundland	77	1,238	2,032	83
Bridgeburg to United States			32,276	
Bridgeburg to Great Britain via. U.S.		7,289		
Toronto to Great Britain		5,689	300	
" United States			2,846	
" West Indies		18	70	
Bayfield and Mulgrave to Newfoundland	53	754	480	
Total	670	162,003	62,147	128

Export Animals rejected at following ports from April 1, 1908, to March 31, 1909.

Port.	Cattle.	Sheep.
Halifax, N.S.	1	
Sydney, N.S.	2	
St. John, N.B.	12	
Montreal, Que.	424	48
Total	439	48

Of the above 105 cattle at Montreal were rejected for actinomycosis and 2 cattle for mange. The rest of the animals were suffering from lameness, or injuries received during transportation, and showed no indication of contagious or infectious disease.

MEAT INSPECTION.

Very satisfactory progress has been made in the development and further organization of the Meat Inspection service inaugurated in September, 1907, under the authority of The Meat and Canned Foods Act.

The operations of this Division, although of course confined to establishments engaged in export or interprovincial trade, are attracting much favourable comment, as a result of which there is every reason to believe that like methods of inspection will shortly be adopted by municipal authorities in many communities throughout the country.

A very great deal of good has also been effected by the application of the provisions of the Act to establishments engaged in the preservation of fruits and vegetables, and in the preparation of condensed milk.

Although in some cases the conditions, sanitary and otherwise, in these establishments were found to be satisfactory, in others they were quite the reverse. But little difficulty, however, has been experienced by the inspectors in convincing owners and managers that a ready compliance with the requirements of the Department would be to their advantage. A marked improvement in sanitary conditions as well as in methods of operation and in quality of materials used has resulted from the inauguration of this new service.

A full report of the work done in the Meat Inspection Division will be found elsewhere.

ESTABLISHMENTS UNDER INSPECTION, MARCH 31ST, 1909.

No.	Name.	Place.	Inspectors in Charge.
1	Fowler's Canadian Co	Hamilton	H. H. Ross, V.S. A. C. Ramsay, V.S. J. Edgecombe.
2A	Geo. Matthews Co., Ltd	Hull, P.Q	T. H. Richards, V.S. J. Terrance.
2B	" "	Brantford	F. A. Walsh, V.S.
2C	" "	Peterborough	W. A. Henderson, V.S. D. R. Bone, V.S.
25	Montreal Abattoir Co	Montreal	M. J. Kellam, V.S. C. E. Derome, M.V. W. H. James, V.S. K. R. Foster, V.S. R. D. Orr, V.S.
4B	Davies Limited	"	A. R. Torrie, V.S. A. R. Crooks, V.S. J. Briere.
5	Laing Packing and Provision Co	"	J. W. Symes, D.V.S. E. G. Lemieux, M.V. A. J. G. Hood, M.V. H. Macey.
22	Montreal Union Abattoir Co	"	W. Kime, V.S. W. J. Morgan, V.S. J. W. Purdy, V.S. A. R. Douglas, D.V.S. J. R. Young. Geo. Brown.
24	Wm. Clark	"	C. D. Bancroft, D.V.S.
29	N. K. Fairbanks Co	"	A. W. Beach, V.S.
4A	Wm. Davies Co., Ltd	Toronto	L. A. Willson, V.S. J. E. Morse, V.S. G. C. Brownridge, V.S. M. W. Everett. Denis Brown.
6	Park Blackwell Co	"	T. M. Pine, V.S. J. B. White, V.S. J. D. Irvine, V.S.
7	Harris Abattoir Co	"	R. E. Murray, V.S. A. C. Walker, V.S. J. H. George, V.S. F. C. Jones, V.S.
8	D. B. Martin Co	West Toronto	F. Fisher, V.S. J. A. Hodgins.
9	Gunns Limited	"	J. A. McLeish, V.S. S. S. Dickinson, V.S.
4C	Davies Packing Co	Harriston	C. J. Johannes, V.S.
10	F. W. Fearman Co., Ltd	Hamilton	J. W. Porter, V.S. W. A. Morrin, D.V.S.
11	Ingersoll Packing Co	Ingersoll	F. H. S. Lowrey, V.S. E. R. Farewell, V.S.
13	Whyte Packing Co	Stratford	C. E. Edgett, V.S.
14	Collingwood Packing Co	Collingwood	J. R. Thompson, V.S.
15	Jos. O'Mara	Palmerston	S. Ransom, V.S.
16	Wm. Ryan Co	Fergus	H. E. Marshall, V.S.
17	H. Coleman	Kincardine	Wm. Lawson, V.S.

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ESTABLISHMENTS UNDER INSPECTION, MARCH 31ST, 1909—*Continued.*

No.	Name.	Place.	Inspectors in Charge.
27	Tillsonburg Packing Co.	Tillsonburg	D. A. Irvine, V.S.
18	J. Y. Griffin Co.	Winnipeg	A. R. Walsh, V.S. J. H. Shonyo, V.S J. R. English, V.S.
19	Gordon, Ironside & Fares	"	W. R. Bell, V.S. B. A. Bescoby, V.S. C. Maconachie, V.S.
20	Gallagher, Holman & Lafrance	"	J. D. Ross, V.S. A. E. Cameron, V.S. A. Hobbs, V.S.
21	Western Packing Co.	"	J. H. Snider, V.S.
23	P. Burns Co.	Calgary	W. A. McGill, V.S. C. W. J. Haworth, V.S. T. G. McClelland.
18B	J. Y. Griffin Co.	Edmonton	C. C. Evely, V.S. M. Barker, V.S.
30	Vogel Meat Co.	Strathcona	I. Christian, V.S.
33	Dominion Meat Co.	Calgary	W. A. McGill, V.S.
40	Aylmer Canning Co.	Aylmer, Ont.	D. C. Tennent, V.S.

Chief, Meat Inspection Division.. ..R. Barnes, V.S.
Travelling Inspector.. ..E. A. Bruce, V.S.
In charge of Montreal.. ..M. J. Kellam, V.S.
In charge of Toronto.. ..L. A. Willson, V.S.
In charge of Winnipeg.. ..C. D. McGilvray, M.D.V.
Inspectors of Canning Factories.. ..R. Bowlby,
..F. E. N. Boulter.

DISEASES FOUND ON POST-MORTEM INSPECTION, AND NUMBER OF CARCASES AND PORTIONS CONDEMNED FROM APRIL 1ST, 1908, TO MARCH 31ST, 1909.

Disease.	Cattle.			Swine.			Sheep.		
	Car.	Por.	Lbs.	Car.	Por.	Lbs.	Car.	Por.	Lbs.
Abscess	29	14,617	48	41	2,239	133	2	92	
Actinomycosis	7	2,905		4	214	10			
Adenoma	1								
Angeoma		2							
Ankylosis		1							
Arthritis					2				
Atrophy		80			1				
Bronchitis		2							
Bruises	185	5,420	1,696	25	1,645	11,247	40	187	246½
Calcification		7	12						
Caries		1							
Cirrhosis		11			15			1	
Congestion		9			9			11	
Cripples	10	126		24	3,041	1,853	1	17	
Cysts	2	33		1	392				
Cysticercus Bovis	66	24							
Cysticercus Cellulosae				136	9				
Cysticercus Tenuicollis							2	1	
Decomposition				1	249				
Degeneration	1	1			8				
Dirty		30		1			1	16	
Downer				6	4		1		
Dying Condition	2			3			1		
Emaciation	76			24	4		48		
Emphysema		1			88				

DISEASES FOUND ON POST-MORTEM INSPECTION, &c.—*Continued.*

Disease.	Cattle.			Swine.			Sheep.		
	Car.	Por.	Lbs.	Car.	Por.	Lbs.	Car.	Por.	Lbs.
Enlarged Kidney					2				
Enteritis	7			21	1				
Erysipelas				1					
Exudation		3							
Frozen				3	11				
Gastritis		3		1					
Hemorrhage		1	528						
Heat Prostration				3					
Hematodes	1								
Hepatitis		2			1				
Hernia		2		13	64				
Hog Cholera				2					
Hydrema Cachexia	23			1	1		1		
Hydronephrosis		5							
Hypertrophy		2							
Immaturity	2,570								
Imperfect Bleeding	1			8	1				
Induration		1			133				
Inflammation	4	4		38	21		2		
Jaundice	4			7	2		10		
Leukemia				2					
Lymphadenitis	1						9	1,762	
Malformation					1				
Mammitis					19				
S. Mastitis			65						
Melanosis		2			1				
Metritis	7	2		7	1		3		
Necrosis		58		3	7,165			870	
Nephritis	2			4					
Nodules, Flukes, Parasites	1	33,380	482	1	6,643	12	3	12,537	
Omphalo Phlebitis	7	606						30	
Oseophagostomum		1						96	
Osteomyletis			75						
T. Pentastotumus								1	
Pericarditis	16	79			9		1		
Peritonitis	8			34	36		2		
Pleuritis	13	516		81	948		6	63	
Pneumonia	43	2		185	33		33	5	
Pregnancy	1			3					
Pyaemia	86	9		137	5		23		
Scalded				3	2				
Schirrous Cord		1		2	1				
Scorched Burned				5	12				
Sexual Smell				697	470	75			
Skin Disease				6	86				
Smothered				1					
Synovitis			15						
Tuberculosis	1,388	7,780	492	3,009	175,483	72			
Tumour	2	23		3	39	290		1	
Uremia	1			5	2				
Urticaria				1	29				
Vaginitis	1								
Wound					7				
Total	4,566	65,752	3,413	4,553	199,149	13,692	189	15,690	246½
Taken into Establishment contrary to Regulations			345						
Found Dead	84			1,102			139		
	4,650	65,752	3,758	5,655	199,149	13,692	328	15,690	246½

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CONDEMNATION OF MEATS DURING THE COURSE OF REINSPECTION.

	Cattle.	Swine.	Sheep.	Poultry.
Decomposed	448	586		
Sour	87,453	227,703½	2,845	231½
Dirty	6,665	9,461	699	
Total	94,566	237,750½	3,544	231½

SUMMARY—APRIL 1, 1908-9.

Total number of cattle slaughtered	298,241
Carcases of cattle 'Condemned'	4,566
Percentage of cattle 'Condemned'	1·53
Portions of cattle 'Condemned'	65,752
Total number of sheep slaughtered	191,792
Carcases of sheep 'Condemned'	189
Percentage of sheep 'Condemned'	·098
Portions of sheep 'Condemned'	15,690
Total number of swine slaughtered	1,532,796
Carcases of swine 'Condemned'	4,553
Percentage of swine 'Condemned'	·297
Portions of swine 'Condemned'	199,149
Total number of animals slaughtered	2,022,829
Total number of carcases 'Condemned'	9,288
Percentage of carcases 'Condemned'	·459
Total number of portions 'Condemned'	280,591

Total amount condemned on reinspection, 336,092 lbs.

LIVE STOCK BRANCH.

Although the work performed by this Branch during the year just past has been marked by no specially striking or unusual features, it has been generally effective, while considerable progress has been made in various directions.

CANADIAN NATIONAL RECORDS.

The completion of the organization of the National Records, which during 1907 called for the expenditure of much time and labour, especially in the province of Quebec, has required considerable attention during the year just past.

Among the other matters of interest in this connection may be mentioned the continued work of the Commission entrusted with the task of inspecting French Canadian horses for registration in the new Stud Book. The members of the Commission were kept busy throughout the summer and fall, but, in spite of their best efforts, they found it impossible to finish their task at the time appointed for closing the Book, namely, December 31st, 1908. It was therefore necessary to postpone until the coming season the work of visiting the Counties of Gaspe and Bonaventure, as also Isle aux Coudres. As it is reported that there are a considerable number of typical French Canadian horses in these districts, it is hoped that many new registrations will be obtained.

There are also a few horses in Ontario, and some scattered throughout the North-west provinces, which will have to be inspected but there should be very few eligible horses left unregistered at the close of the coming season.

The Exhibition held at St. John's, Quebec, in September last, afforded an excellent illustration of the value of the work undertaken by the Department in the direction of re-establishing the old French Canadian breed of horses on sound and legitimate lines. On this occasion no less than forty-six stallions and seventy-six mares, all registered in the new Record, were shown in competition for the special prizes offered by this Department acting in conjunction with the French Canadian Horse Breeders' Association. The quality of these animals was, in almost every case, very high and the exhibit created the most favourable impression on the many experienced horsemen from other provinces who were present.

It is, of course, somewhat doubtful as to whether it will be possible to re-establish the old breed in its entirety as the number of typical registered stallions available is very small in comparison with the number of mares scattered, as the latter are, over a wide territory. Many of those interested in the breed are in favour of permitting the registration for a limited time of selected stallions of other like breeds, and it is likely that this question will be carefully considered by the Association at its next meeting. So far, however, no animals have been registered other than those conforming closely to the established standard as regards size, type and breeding.

Since the date of my last report no additions have been made to the list of National Records, but it is expected that during the coming year a number of new Associations will be incorporated.

The movement for the establishment of these Records is largely due to the new Customs regulations, which, after being fully discussed by the members of the National Live Stock Association, at the meeting of that body held here in February, 1908, were later formulated by the National Records Board, and on your recommendation adopted by the Customs Department in June of last year. Under these regulations free entry to Canada can be granted to animals for the improvement of stock only upon the production by the importer of a certificate of registration in the Canadian National Records, or, in the case of Holstein-Friesian cattle, a similar certificate signed by the Secretary of the Holstein-Friesian Association of Canada. Animals for which no Record exists in Canada will be accorded free entry on the presentation of an import certificate issued by the Accountant of the Canadian National Records on the production to him by the importer of a certificate of registration in a recognized Record in the country of origin of the breed. It will be observed that under these regulations, animals coming from countries other than that in which the breed to which they belong originated, are debarred from free entry unless there is a Canadian Record in which they are eligible for entry. The effect of this limitation is to prohibit the free entry of a number of European breeds for which Records exist in the United States but not in Canada, and as the only way of overcoming this difficulty is through the formation of Canadian Records, action with this end in view is being taken by those interested.

The annual report of the Record Committee to the Record Board and The Record Associations is printed as an appendix hereto.

TRANSPORTATION OF PURE BRED STOCK.

New and much more favourable arrangements have been made with the railway companies for the transportation at reduced rates of pure bred stock when shipped for breeding purposes. This privilege is now granted to any shipper who can present a certificate of registration in the Canadian National Records, or, in the case of Holstein-Friesian cattle, a similar certificate of registration in the Holstein-Friesian Association of Canada. By this arrangement the interests of the shipper and the railway company are simplified and safe-guarded. The railway companies have further most generously granted a special concession to importers of pure bred stock,

such animals being given the reduced rate from the port of entry to destination on the production by the owner, or person in charge, of a certificate signed by the Accountant of the Canadian National Records.

COMMERCIAL LIVE STOCK TRANSPORTATION.

Realizing the importance of protecting the interests of the producer of commercial live stock, who is, as a rule, less able to guard his own interests than is the breeder of pure bred animals, I have for some time been devoting much attention to the question of transportation and marketing, with special reference to our export trade in ranch cattle. The methods of handling commercial live stock now in vogue in Canada are certainly capable of great improvement, and it is probable that after the subject has been fully investigated, it may be necessary to take action for the improvement of existing conditions by means of special legislation. A special report dealing with this subject is now in course of preparation and will shortly be published.

RECORD OF PERFORMANCE.

This work, which has for its object the supervision and testing of pure bred dairy cows, is constantly increasing in popularity. In fact, the number of breeders of pure bred dairy stock desirous of availing themselves of its conditions has become so great that it has been necessary to add a third inspector for the Provinces of Ontario and Quebec, while in other parts of the Dominion the work is also growing.

Except in the provinces named, however, the work has not as yet grown to such an extent as to require that the men engaged should devote their whole time to it, although they are in all cases fully qualified for their duties. The demonstration of superior milking qualities in the various breeds and in different individuals of these breeds, has proved to be of great economic importance and the enthusiasm shown by owners is easily understood when it is realized that the prices, especially of young bulls of dairy strains, are largely controlled by the milk producing records of their progenitors. The work is also beneficial in many other ways as a desire to have each animal make the best possible showing leads to intelligent experimentation with different rations, as also to the cultivation of special care and kindness in the treatment of milking cows. These benefits are particularly well marked in the case of the young farmers and farmers' sons.

SPEAKERS AND JUDGES.

Much has been done in the furnishing of speakers for institute meetings and instructors for live stock judging classes, as also judges for fairs in all the provinces except Ontario and Manitoba, in which work of this kind is taken care of by the provincial authorities. Needless to say, the Branch is always ready and willing to co-operate heartily with any of the provincial departments of agriculture.

MARITIME WINTER FAIR.

Early in the year it was found necessary to make a new arrangement with the Maritime Stock Breeders' Association with regard to the management of the Winter Fair at Amherst. The usefulness of this institution, originally established under the auspices of this Branch in conjunction with the Departments of Agriculture of the three eastern provinces, has now been fully demonstrated. It is gratifying to be able to report that not only is public interest in the work increasing, but that tangible results are easily becoming more evident, and that there is a decided improvement in the quality of the stock presented for exhibit.

SHEEP INDUSTRY.

For a considerable time the business of sheep raising in Canada has failed to keep pace with other lines of agricultural industry. The number of sheep produced in the Dominion is unquestionably far below what it should be, especially in view of the enormous possibilities of the country as regards both grazing and winter feeding. I am strongly of opinion that no effort should be spared to remedy this regrettable state of affairs, although I am not at present prepared to define the exact lines which should be followed. A beginning was, however, made last year in Prince Edward Island and in some districts of Nova Scotia, which are particularly well adapted for sheep raising. One result of the experiments conducted by the Health of Animals Branch with the view of ascertaining the exact nature and cause of the malady, locally known as Pictou cattle disease, was the demonstration of the fact that sheep can be safely and profitably used in the eradication of ragwort, the weed to which the disease above mentioned is due. Although the experiments were concluded in the spring of 1908, the lease of the farm on which they were conducted did not expire until October. Advantage was taken of this fact to utilize these premises as a pasture for a number of pure bred rams which were purchased in Ontario, and after being grazed during the summer were sold in the fall at four different points in the weed infested area. The prices obtained were very encouraging, and I would urge that similar methods should be followed to stimulate the production of sheep not only in weed infested districts, as in this instance, but in all other localities where there is good reason to believe that the industry would be profitable.

PUBLICATIONS.

Several publications on live stock subjects have been issued during the year, the most noteworthy of these being an exhaustive treatise on 'Sheep Husbandry in Canada.' The attractive form in which this bulletin, which contains much useful and practical information, was presented to the public is due to the interest shown in the work by Mr. J. B. Spencer, B.S.A., to whom its compilation was entrusted and who devoted much time and effort to the task.

Thanks are also due to Messrs. W. A. Hamilton, of Lethbridge, Alta.; J. A. McCaig, of Edmonton, Alta.; John McQueen, of Brandon, Man.; and A. W. Smith, of Maple Lodge, Ont., who contributed valuable articles, as did also several officers of the Department, including Dr. J. A. Couture, of Quebec, George H. Greig, of Winnipeg, and Dr. S. F. Tolmie, of Victoria.

Much valuable information was also received from the several provincial departments of agriculture; sheep buyers, wool dealers and woollen manufacturers, beside a large number of sheep raisers throughout the Dominion.

Thanks are also due to the *Farmers' Advocate,* the *Scottish Farmer,* and the *American Sheep Breeder,* for valuable photographs used in illustrating this work.

A bulletin somewhat similar in character, but dealing with the production of beef, is now in course of preparation and will be issued shortly.

In conclusion, I would say that the arrangement under which the Health of Animals and Live Stock Branches are operated under one head has, so far, been found very satisfactory, much effort and expense being saved in the performance of duties which formerly, to some extent, overlapped.

I have the honour to be,
Sir,
Your obedient servant,

J. G. RUTHERFORD,
Veterinary Director General and
Live Stock Commissioner.

To the Honourable,
The Minister of Agriculture,
Ottawa, Ont.

APPENDIX No. 1.

G. HILTON, V.S., Chief Veterinary Inspector.

OTTAWA, March 31, 1909.

SIR,—

I have the honour to submit herewith my annual report for year ending March 31, 1909.

During the first five weeks of this period I was stationed at Regina completing the organization of the work of your Branch in the provinces of Saskatchewan and Alberta, which was taken over from the Commissioner of the Royal Northwest Mounted Police in July, 1907.

Dr. Hopkins, having been appointed to take charge of the work in Saskatchewan, arrived at Regina from Ottawa on April 20, and Dr. Hargrave, the officer chosen for Alberta, reported two days later. These officers were instructed in their duties as fully as possible, the details of the office and the administration of the work were carefully explained.

Mr. Spanner, who had been acting as clerk in the Regina office, returned for a temporary period to Medicine Hat with Dr. Hargrave for the purpose of opening the records in the new office at that point. With a staff consisting of Miss Crawford as stenographer, and Mr. Porter as clerk, Dr. Hargrave assumed charge of the work in Alberta on May 1 with headquarters at Medicine Hat.

The work in Saskatchewan was transferred on the same date to Dr. Hopkins, the Regina staff otherwise remaining unchanged.

Having completed the transfer of the work in these provinces, I immediately left Regina for Ottawa. Soon after my arrival you left for Rome as the official delegate for Canada to the International Institute of Agriculture, and I was placed in charge of the Health of Animals' Branch during your absence.

Upon your return on the 13th of August my duties were still confined to your office, and upon your leaving for Rome the second time on October 26, I again assumed charge.

On November 16, a cablegram was received from the British Board of Agriculture, advising this Department of the existence of Foot and Mouth disease near Danville in the State of Pennsylvania. The cable stated further that the affected cattle were reported to have been shipped from Toronto via Buffalo to Danville, and that some of the affected cattle were of Canadian origin.

The situation had a very serious aspect, especially so when it was found later that the affected animals had been shipped from Detroit through Canada to Buffalo.

Protective measures were immediately enforced, following those adopted by you during the outbreak of this disease in the New England States in 1902, and directly it was possible you were communicated with by cable and your instructions rigidly followed.

On November 16, a Ministerial Order was passed prohibiting the importation into Canada from the State of Pennsylvania of any cattle, sheep, swine, or goats, or of the flesh, hides, hoofs, horns, or other parts of same, for six months, as also any of the said species or products that had been within the said state within two months immediately preceding their offer for entry.

Two officers were promptly despatched to Toronto to obtain information relative to the origin of shipments which had passed through that point to Buffalo. Upon re-

ceiving this information from the railway officials, they proceeded to the various farms from which these animals came, and made a careful inspection of all stock found on the premises. They were fortunately able to report the non-existence of any disease, and learned, while there, that these districts had been visited a few days previously by the United States Bureau officers, in an endeavour to trace the source of infection of the outbreak of Foot and Mouth Disease in that country. The fact that no restrictions were placed upon Canadian cattle by the American authorities confirmed the report of the inspectors of this Branch, and removed suspicion from this source.

Prompt measures were taken for the thorough disinfection under official supervision of all stock cars, and especially those of American origin. Special officers were placed at suitable points along the boundary to supervise this work. The stock yards at Toronto and Montreal were ordered to be disinfected, as also those on the railway lines running from Windsor to Niagara Falls and Bridgeburg. This work was performed under the supervision and to the satisfaction of the inspectors of this Branch.

In order to effectively enforce the restrictions the services of every available inspector were directed to this work, and numerous lay inspectors were appointed to assist them. Fortunately a water boundary separated the adjoining portions of the infected states, which made the carrying out of protective measures more practicable. A limited territory was given to each officer, for which he was responsible, and a systematic supervision of these men was maintained by a separate force of patrolling inspectors, who reported promptly existing conditions. In this connection I would say that without a single exception the Customs officers assisted the inspectors of this Branch very materially in their work.

In accordance with a cablegram received from you a large number of veterinarians were temporarily employed for the purpose of making a farm to farm inspection of all animals in the Niagara Peninsula, and also in the district around Toronto, for the purpose of satisfying the British authorities that this disease did not exist in that part of Canada.

Dr. Moore proceeded to Toronto, engaged the number of men required and organized the work there, while Dr. Stork performed similar duties at Windsor.

A great deal of trouble was experienced in disposing of hay and straw, which was used for packing of goods from the infected states, and which had been imported just previous to the enforcement of these restrictions. With the assistance of the Customs officers, however, this was eventually properly and safely disposed of.

Upon receiving further advice that the disease had been detected in the State of New York, the order already in force was rescinded on November 20th, and one substituted therefor, prohibiting the importation of all animals, or parts thereof, or hay, straw, fodder or manure from the States of Pennsylvania and New York. These restrictions were also placed upon similar importations from any state promptly upon receipt of information that infection existed therein, so that by the 28th of November importations were prohibited from the States of Pennsylvania, New York, New Jersey, Michigan, Maryland and Delaware.

In view of the fact that the United States regulations permitted the passage of live stock through the infected areas, it was deemed advisable, owing to the possibility of the introduction of this disease by indirect contact through wharfs and yards at Canadian ports, or the possibility of the development of the disease en route, to prohibit ships carrying live stock from American ports to touch any Canadian port. The shipment to Europe of Canadian animals through American ports, or the shipment of Canadian animals from Canadian ports in vessels carrying American live stock, or the shipment of Canadian live stock from Canada on a vessel which had touched at a port in any of the prohibited states within twenty-one days of the passing of the Order, was also prohibited.

The exportation to Europe of Canadian live stock was further limited to the ports of St. John, N.B., and Halifax, N.S.

As no further outbreaks were reported in the United States, and it was apparent that the disease was under control, it was not necessary to enlarge on the restrictions already in force. In view, however, of the nature of the disease in question, every precaution was taken to see that the existing restrictions were effectively continued until your return in the latter part of December.

In conclusion I would say that the officers of this Branch fully realized the seriousness of the situation, which was evidenced by the zeal and despatch with which they performed their duties throughout the dangerous period.

I have the honour to be,
Sir,
Your obedient servant,

GEORGE HILTON,
Chief Veterinary Inspector.

The Veterinary Director General,
Ottawa.

APPENDIX No. 2.

R. BARNES, V.S., Chief, Meat Inspection Division.

OTTAWA, March 31, 1909.

SIR,—I have the honour to submit herewith my report of the work carried on under the Meat and Canned Foods Act for the year ending March 31, 1909.

During the first three months of the year, in my capacity as Travelling Inspector, I visited the various establishments coming under its operation in Ontario and Quebec, watching closely the carrying on of the work, and rendering such assistance as seemed to me to be necessary to promote uniformity and a systematic method of inspection.

Dr. S. H. Ward, who, since the inauguration of the work on September 3, 1907, had filled the position of Chief of the Meat Inspection Division, tendered his resignation, which was accepted to take effect on July 1, 1908, he having accepted a position as Secretary and Chief Executive Officer of the Live Stock Sanitary Board of the State of Minnesota. In consequence of this, changes in the personnel of your staff were made necessary.

Inspector E. A. Bruce, formerly in charge of the work of Inspection in one of the establishments, was delegated to take up my work as Travelling Inspector.

The progress made during the year has been very satisfactory when one considers the vast field of work covered by such a measure as The Meat and Canned Foods Act, and the limited number of qualified Inspectors available to carry out its provisions, who have been compelled to perform an arduous task, necessitating long hours of work which has been faithfully and willingly done.

The interest shown by the management of the different establishments under inspection, and their co-operation, have been of great assistance to your officers in the performance of their varied duties.

The percentage of losses sustained during the year by those whose establishments come within the operation of the Act shows a slight increase over that of the preceding seven months, yet it has been met with but little complaint.

The supply of hogs has been somewhat smaller than usual and prices have steadily advanced, yet this does not appear to any appreciable extent to have increased the production. Owing to this scarcity, together with the somewhat unsatisfactory condition of the British market, the export of Bacon and Hams shows a decided decrease as compared with the preceding year, but it is hoped that confidence on the part of our foreign purchasers may be maintained owing to the fact that the Meat and Canned Foods Act permits only the export of meat and meat food products which have passed Government Inspection.

A much better class of cattle is now being slaughtered in the various establishments: animals which might be looked upon with suspicion are passed by, the management not wishing to run the risk of their condemnation at the hands of your officers. The greatest change in this respect is noticed in the veal calves slaughtered, the percentage of immature animals presented falling approximately 33 per cent, a fact which affords a great deal of satisfaction and which will tend to produce in the public mind a greater confidence in the wholesomeness of this particular product. The pernicious practice during the past few years of placing on the market veal of questionable age and condition cannot be too strongly condemned.

In summing up the number of animals of the different classes slaughtered, I am somewhat surprised at the comparatively small number of sheep and lambs killed. A

much greater demand for mutton would result were it generally known that these animals are found not to be affected with the diseases for which the majority of condemnations are made in the case of the other meat food animals.

On April 7, 1908, an examination, as provided by the Act, was held in Amherst, N. S., Montreal, P.Q., Ottawa, Toronto, and London, Ont., Winnipeg, Man., Regina, Sask., Calgary, Alta., and Vancouver, B.C., of which all veterinarians residing in Canada, whose addresses were known, were notified. Of the 100 candidates who wrote 23 were successful in obtaining the percentage of marks necessary in order that their names might be placed upon a list of those eligible for appointment as officers of this Division.

During the session of Parliament which prorogued early in 1908, amendments were made to the Act, the most important of which was, perhaps, the repealing of Section 11 and the substituting therefor of the present section which has the effect of bringing all establishments engaged in any way in export trade of meats or meat food products (unless exempted by the Governor in Council), within its operation.

As a result of this, sections 25 and 26 of the Regulations governing the Inspection of Meats which require the marking or certification of meats or meat food products passing from one province to another, or out of the Dominion, became operative.

Such being the case difficulties peculiar to conditions and established customs presented themselves.

In the maritime provinces the supply of beef and pork does not meet the demand consequently, there are no establishments, engaged in export trade, which do sufficient business to warrant the expense of placing an inspector therein.

The provinces are small in area and considerable trade between the mainland and the contiguous islands is carried on at certain periods by small dealers, which trade must have ceased when the Meat and Canned Foods Act was enforced unless carried on in accordance with this Act, and the regulations made thereunder. Hence it was deemed advisable to recommend to Council that the regulations be so amended as to permit the shipment without inspection, of fresh meat and fresh meat products from any one of the three maritime provinces to any other, or to Newfoundland, St. Pierre and Miquelon, or the Magdalen Islands, which recommendation was granted.

Again, the supply of mutton in the above-mentioned provinces is at certain seasons, in excess of the demand for local consumption, and for a number of years it has been shipped during the cold weather to various points in the west. To conserve this trade, and to assist those engaged in sheep raising, arrangements were completed whereby the slaughter of these animals was concentrated at Sussex and St. John, N.B., to which points regularly qualified and appointed officers of this branch were detailed in order to inspect all carcasses and to mark such as were found fit for food, an arrangement which proved satisfactory, not only to the buyer and seller but to the producer, who was thus enabled to obtain the highest price as the market was in no way a local one.

A similar condition of affairs presented itself in the counties of Essex and Kent, due to the custom, long established in that district, of farmers slaughtering their own animals during the fall and winter months, and selling the dressed carcasses to dealers who ship them, chiefly, to the province of Quebec. In order to preserve this trade, it became necessary to place inspectors at different shipping points, namely, Chatham, Harrow, Essex, Amherstburg and Oldcastle, a total of 12,338 hogs being inspected during the season just ended. Such an arrangement not only permitted this trade to continue but allowed all animals so inspected and marked by our inspectors to enter establishments under inspection, and thus created a larger market and keener competition than could otherwise have existed.

Considerable difficulty has been experienced in securing the observance by the transportation companies of the requirements of the Act and the Regulations made thereunder. Bearing in mind the extent of the Dominion, and the vast army of their employees, a great amount of leniency has been shown them, yet it became necessary

to enter an action against one company, with the result that judgment was given in favour of this Department. This has produced a salutary effect upon the other companies.

On October 1st, 1908, the British Government, through the Local Government Board, brought into force, under the provisions of 'The Public Health Act, 1896,' the new 'Regulations governing the Importation of Foreign Meat,' which had the effect of prohibiting entirely meats of certain classes, of which very little (if any) was received from Canada. It also provided for the importation of other classes of meat under certain restrictions, the conditions of which could not have been met by Canadian exporters had 'The Meat and Canned Foods Act' not been in operation.

During the year four additional establishments were placed under inspection, and inspection was withdrawn from one owing to its destruction by fire.

During the year Mr. Russell Bowlby, a man thoroughly acquainted with the canned fruit and vegetables trade, was busily engaged in travelling from place to place throughout Canada, closely watching the sanitary conditions at establishments engaged in the canning of fruit and vegetables and manufacture of preserves, jams, jellies, pickles, etc., instructing the owners or managers as to the requirements of the Act, and making such suggestions as appeared to him necessary in order that such requirements might be more easily met and maintained. The great majority of the factories visited were in very fair condition, and those which were not found satisfactory on his first visit have since shown marked improvement.

Owing to the large number of houses engaged in this trade it was deemed advisable to appoint another Inspector to assist in the work. In September, 1908, Mr. F. E. N. Boulter, of Picton, a thoroughly qualified man who had been connected with the canning business since his boyhood, was appointed. The wisdom of this appointment was shown by his excellent work, he being detailed at first to look after Evaporators, some 79 of which he visited before the operations for the season closed. From his reports it appeared that many of these plants were not in the condition desired, yet it is gratifying to know that his suggestions were well received and in nearly all cases acted upon, and in such plants as he was able to revisit evidence of the co-operation of the management in securing cleanliness and proper sanitary conditions was plainly seen.

Your inspectors, having the experience of years of practical work in this trade, were able to offer suggestions, and impart information along several lines intimately associated with the work and in this way have been able to accomplish a great amount of good not only in raising the standard of the sanitary surroundings but in the quality and preparation of the products manufactured. The interest and the readiness exhibited by the management of the factories in complying with the demands and suggestions of your Inspectors attest to their hearty support of your endeavour to place the standard for canned foods upon a high plane, and thereby to dispel the lack of confidence which at the present time appears to exist in regard to the wholesomeness of such preparations.

I have the honour to be,
Sir,
Your obedient servant.

R. BARNES,
Chief, Meat Inspection Division.

The Veterinary Director General.
Ottawa.

APPENDIX No. 3.

A. E. MOORE, D.V.S., *Chief Travelling Inspector.*

OTTAWA, March 31, 1909.

SIR,—I have the honour to submit to you this my annual report for the year ended March 31, 1909.

GLANDERS.

During the year I have tested 103 horses with mallein, of which forty-one reacted and were destroyed.

I have dealt with only one serious outbreak of glanders this year. About the last of April, 1908, a large Railway Construction Company operating in northern Quebec, reported that they had recently lost a horse which their foreman thought was affected with farcy. I visited their camps accompanied by Dr. George Higginson, where we found eighty-two very valuable horses, some of which showed clinical symptoms of the disease. The whole lot, therefore, which were in four different camps, were tested with mallein, with the result that forty-one reacted and were immediately destroyed. The forty-one which did not react were closely quarantined and retested after an interval of thirty days, fortunately there were no more reactions.

I was unable to trace definitely the origin of this outbreak. There were, however, many American branded horses among them, which came over from Montana about three years ago, and it is possible that the disease was thus imported in its ineipient stage. I made a close examination of other horses belonging to several smaller firms, and of private individuals which were near the infected camps but no evidence of glanders was seen.

From time to time when not engaged in travelling I have made systematic clinical inspections of the horses in the city of Ottawa. I have frequently visited the market, and have inspected the horses in about all the large stables and a great many of the smaller ones. Special attention was paid to the horses in the stables where outbreaks had occurred in past years. I am glad to report that I have not seen even a single suspicious case in this city during the year.

SUSPECTED GLANDERS.

The following cases were reported, but on investigation I found the diseases to be other than glanders.

2 mares near Shawville, Que., suffering from irregular strangles.
1 horse near Merrickville, Ont., suffering from influenza.
1 horse near Lakefield, Ont., suffering from an ulcerated tooth.
1 horse at Mattawa, Ont., suffering from typhoid influenza.
1 horse near Belleville, Ont., suffering from nasal gleet.
1 horse at Blackburn Mines, Que., suffering from nasal gleet.
1 horse at Billings Bridge, Ont., suffering from nasal gleet.
1 horse at Bells Corners, Ont., suffering from distemper.

The other inspectors in Ontario and Quebec have also found that many of the suspected cases which they investigated proved not to be glanders.

An inspector was sent into the Saguenay district again this year where he remained for some time and carefully inspected a great many horses in the six parishes where a house to house test was made three years ago. No further trace of the disease was found.

All of the above reports are very encouraging and certainly demonstrate that the disease is being eradicated. Since your present policy has been in force there has been no recurrence of the disease in any of the stables where serious outbreaks have been dealt with.

TESTING OF IMPORT HORSES FROM THE UNITED STATES.

April 20—Tested one mare from New York at Ottawa.
May 6—Tested one stallion from New York at Kingston.
May 7—Tested two geldings from New York at Kingston.
May 19—Tested one stallion from New York at Ottawa.
May 21—Tested one mare from New York at Kingston.
October 14—Tested two geldings from New York at Kingston.
November 7—Tested one gelding from Vermont at Ottawa.
There were no reactions.

TUBERCULOSIS.

I have tested 431 cattle, 104 of which were diseased and one suspicious. These cattle were in herds which are under the special supervision of this Branch.

I also assisted Dr. Hilton in testing 74 cattle at the Tuberculosis Experiment Station near Hull.

Three cattle were tested by me for export to the United States this year, all of which passed.

During the year I have twice inspected the herd at Hudson Heights which has been under my supervision for some time. The cattle appear to be in good health. I intend to retest them again this sping.

During the year I have earmarked reacting cattle at the following places:—

3 at Wakefield, Que.
1 at Bath, Ont.
7 at Vercheres, Que.

These cattle were tested by local veterinarians with tuberculine furnished by this department.

HOG CHOLERA.

In August it was reported that hogs were dying on a farm near Sudbury, Ontario. I visited this farm and found the disease to be hog cholera. As a result of the investigation twelve different places were quarantined and all the hogs thereon destroyed. I could not trace the exact origin of this outbreak although the disease started in two herds where uncooked hotel swill was being fed.

During the last of December, Inspector Willson, who is in charge of the meat inspection at Toronto, reported that he found lesions of hog cholera at one of the abattoirs in hogs which came from near Toronto. On investigation I found the disease in two places. There was no communication between these farms in any way, but both owners were feeding hotel swill which contained the intestines and crops of fowls, as well as uncooked pork refuse, etc.

In all of the above cases the hog cholera lesions were very well marked and were not confused with other lesions sometimes seen where hogs are fed on hotel swill. In every case there were the ulcerations on the bowels, the typical pneumonia, the haemorrhagic condition of the glands, the petechia on the different organs and enlarged spleens.

Several cases of suspected hog cholera were reported in different parts of the country. I found the unhealthy conditions were due either to improper feeding, bad hygienic conditions, intestinal worms or to verminous bronchitis.

SHEEP SCAB.

Only three small outbreaks of sheep scab were discovered this year in the Eastern Provinces. A breeder in Simcoe Co. sold his flock of sheep which were slightly diseased to several farmers; most of the sheep were brought by his neighbours. One breeder in Ontario county, however, bought several and noticed evidence of scabies soon after they arrived on his farm. This breeder did not report his case to the Department but treated them unsuccessfully himself. He allowed them to come in contact with his neighbours' sheep, with the result that one flock became badly affected. This was reported to the Department by the local veterinarian. As a result of this Ontario County outbreak the sheep on ten farms were quarantined, two where disease was found and eight as contact. All of these sheep were dipped under my supervision.

Dr. J. H. Tennant was instructed to proceed to Simcoe county and visit the farmers who bought sheep from the flock where the disease originated. I visited this section and found that Dr. Tennent had made a thorough investigation. Fifteen farms were quarantined, on nine of which the disease was found and six as contact only. The sheep were all dipped under Dr. Tennent's supervision.

A small outbreak was also reported by Dr. Brown near Sarnia. Three farms were quarantined, there being only a few sheep on each farm.

Early this spring Drs. Tennent and Orchard assisted me in making a reinspection of all sheep on the different farms which have been quarantined for scabies during the last three years. On one farm only were found diseased sheep. The owner acknowledged that they were returned to an infected yard after they were dipped, contrary to the inspector's knowledge or orders, and thus became re-infected.

These sheep are now closely quarantined and will be dipped as soon as weather permits. We made a house to house inspection of all the sheep within a radius of five miles from these infected premises but no evidence of scabies was seen.

ANTHRAX.

In August I visited two farms near Martintown, Ont., where I found cattle dying of anthrax. One farmer lost five head and the other lost one cow. On inquiry I learned that cattle had died, presumably of anthrax, on these farms years ago.

In September I was called to Rowena, Ontario, where I found that two cattle had died from anthrax contracted from grazing off an old anthrax grave which had not been properly fenced off.

In all these cases I had the carcasses burned, and advised vaccination of the remaining animals on these farms.

MALNUTRITION IN CATTLE.

During the early spring of 1908 it was reported to your office at different times that many cattle were dying, especially along the St. Lawrence river from Toronto east to the Quebec boundary. After a careful investigation I found the cause of death primarily to be malnutrition. Lack of nutritious food naturally made them very weak as spring came on, and led to different disorders. Hay and feed were very expensive last year and many of the farmers were tempted to sell themselves short. Then they endeavoured to economize by feeding straw and other cheap non-succulent fodders to their cattle. Owing to the dry autumn of last year the fall pastures were very poor and the cattle went into their winter quarters unusually thin. They had therefore no surplus energy to sustain them, and consequently a large number died. As soon as the spring pastures came this trouble disappeared but many of the sur-

vivors, especially milch cows, were very emaciated and were almost worthless for the whole season. In speaking to the veterinary practitioners in different parts of the country I was informed that this condition was very prevalent last spring.

This subject is an extremely important one as there are so many farmers who believe that if an animal only lives until spring her condition does not matter. Thousands of dollars are lost every year by the improper care of animals during the long winter months while they are obliged to be confined. Not only is the quantity and quality of food lacking, but the hygienic conditions in some cases are wretched. I repeatedly come across cases that should be dealt with by the Society for the Prevention of Cruelty to Animals, rather than the Health of Animals Branch of this Department.

BOUNDARY INSPECTION.

Acting on your instructions I have from time to time visited the boundary points between Canada and the United States for the purpose of facilitating the proper carrying out of the regulations, especially those related to the importation of horses, with the view of preventing the introduction of glanders into this country.

In August I visited Newport and St. Albans in the state of Vermont, for the purpose of ascertaining the condition of stock cars which are returned to Canada from Boston and Portland. I found as a result of this investigation that the cars were not being returned in very good condition, some were not even cleaned out and no attempt was made at disinfection. I drew the attention of those in charge on the United States side and they promised that they would carry out our regulations. After this, acting upon my instructions, our boundary officials refused admittance to several cars which were sent over improperly cleansed and disinfected. This resulted in the railway officials being more careful to comply with the regulations.

On January 14th, I visited the ports from Kingston to Cornwall to interview the officers who were placed there to guard against the introduction of foot and mouth disease from the United States. I found everything quite satisfactory.

On January 23rd, I visited Niagara Falls and Bridgeburg and interviewed all the officers at these ports. In consultation with Dr. Orchard I did not consider it necessary to have more than one officer at Niagara Falls. Consequently you recalled Dr. McKenzie who was assisting Dr. Watson.

PRECAUTIONS TAKEN TO PREVENT THE INTRODUCTION OF FOOT AND MOUTH DISEASE INTO CANADA, DURING THE RECENT OUTBREAK IN THE UNITED STATES.

During your absence and acting on instructions from Dr. Hilton, I visited Pennsylvania during the early part of the outbreak of foot and mouth disease in that state for the purpose of familarizing myself with the mode of handling the disease by the United States authorities. I was shown the greatest courtesy by all the officers with whom I came into contact and given every possible chance to obtain the information I desired.

On my return to Ottawa I was instructed to proceed immediately to Toronto and to supervise the inspection of all the live stock which arrived in that city, also to arrange with the railways for the disinfection of all stock cars arriving in the city regardless of their origin or destination. I was also instructed to obtain the services of some of the local veterinarians for the purpose of making house to house inspections of live stock in the Niagara Peninsula and the townships around the city of Toronto.

I arrived in Toronto on November 25th and immediately placed men in the townships along the Niagara river and instructed them to make a systematic inspection of all the live stock in these townships and to be constantly on the look out for recent importations from the States. At this time the outbreaks at Buffalo and Niagara Falls, N.Y. were being dealt with and there was the greatest danger of introducing foot and mouth disease into Canada owing to its close proximity. After keeping the men in

these townships until the outbreak was under control on the United States side, I then placed them along the lines of the Grand Trunk and Michigan Central Railroads on the north shore of Lake Erie, these lines being the great highways for the American live stock transit trade.

After making a careful inspection of nearly 400,000 animals no evidence of any contagious disease was found.

Dr. E. C. Oliver was constantly on duty at the Toronto stock yards and examined daily all the cattle, sheep and swine that came into the city; he also superintended the disinfection of the stock yards, which was done in a very thorough manner.

Merchandise packed in hay and straw from the quarantined states was constantly coming, in bond, into Toronto in spite of the diligence of the officers at the boundary. These goods were in boxes and barrels and these packages had to be opened to find out the nature of the packing; this involved a great amount of work. Dr. Wm. Stubbs ably supervised this work as well as that of the disinfection of stock cars until other duties demanded his attention. I then recommended the appointment of two lay inspectors which was necessary to properly carry out this work.

On January 8th according to your instructions I recalled all the veterinarians working under me, and returned to Ottawa on January 12th.

I have the honour to be,
Sir,
Your obedient servant,

A. E. MOORE,
Chief Travelling Inspector.

The Veterinary Director General,
Ottawa.

APPENDIX No. 4.

C. D. McGILVRAY, M.D.V.

WINNIPEG, March 31st, 1909.

SIR,—I have the honour to submit herewith report in connection with the Health of Animals' Branch in the province of Manitoba for the year ending March 31st, 1909.

The work of the Branch here may, for convenience, be considered under the following divisions:—

Health of Animals Branch.—Diseases Control Division, Quarantine Inspection Division, Meat Inspection Division.

DISEASES CONTROL DIVISION.

The work of the various officers here, engaged in this division of the Branch, has consisted in dealing with the control and eradication of diseases coming under the Contagious Diseases of Animals Act, and the enforcement and carrying out of the various requirements and regulations relating thereto.

Glanders.—While our efforts toward the control and eradication of this disease have been marked by a very noticeable decrease in the number of outbreaks detected and dealt with, and corresponding decrease in number of animals found to be affected and destroyed, it still remains, however, the most important disease engaging our attention.

During the past year, I have inspected and submitted to the mallein test, and destroyed, for glanders, the following number of horses and mules:—

164 were submitted to a first mallein test (this number includes 21 in the province of Ontario).

49 were submitted to a second mallein test (this number includes 12 in the province of Ontario).

30 { 24 were destroyed as a result of re-action to a first mallein test (including 8 in the province of Ontario).
3 were destroyed as a result of re-action to second mallein test (including 2 in the province of Ontario).
3 were destroyed on inspection without test.

Out of this total of 30 horses destroyed, 14 showed clinical symptoms.

Import Horses tested in addition to above.

77 were submitted to a first mallein test, at destination.

2 were submitted to a second mallein test, at destination.

11 were submitted to a first mallein test at boundary (Snowflake) of which 1 reacted and was refused entry.

Glanders Statistics for Manitoba.

Summary showing total number of horses and mules tested and destroyed during year:—

Horses and mules submitted to test—

1st test	989
2nd test	208
3rd test	32

Horses and mules destroyed for glanders—

1st test	95
2nd test	10
3rd test	1
Without test	4
Total	110

Total compensation allowed $9,304.95, being an average of $84.59 each.

Import horses and mules tested at destination.

1st test	330
2nd test	84
3rd test	22
4th test	14

Import horses and mules which reacted to test and were destroyed without compensation.

1st test	5
2nd test	7
3rd test	1
4th test	1
Total	14

No. of import horses remaining untested in Province on March 31st, 1909, is 51.

MANGE OF HORSES.

This disease is still found affecting horses in isolated cases at widely separated points. During the past year I detected mange affecting 2 horses, which were placed under quarantine restrictions.

The total number of horses placed under quarantine restrictions for mange by the various officers here during the past year comprised 65 of which 39 were showing symptoms of mange, the remainder being contact horses. Full information and instructions as to satisfactory treatment of affected animals and disinfection of premises were furnished to owners of affected animals. The disease is readily amenable to treatment, that recommended by the Department being very satisfactory.

MANGE OF CATTLE.

In accordance with the requirements of the Special Mange Order all cattle originating West of Winnipeg are inspected at the Stock Yards here, and any cattle showing indications of mange are detained and are allowed to be removed only for immediate slaughter. While mange is still found to exist among cattle coming from the mange area, as yet we have not detected mange in cattle coming from points in Manitoba or from points in Alberta and Saskatchewan outside of the mange area. Cattle destined for points East of Winnipeg, are only allowed to go forward after being inspected, and under the inspector's certificate. Infected yards are cleansed and disinfected from time to time as exigencies require. Cars which have carried cattle coming from the mange area, and having Winnipeg as their destination point, are cleansed and disinfected with limewash and carbolic acid before being allowed to return for purposes of ordinary traffic.

During the past year, the following number of cattle were inspected at the Winnipeg Stock Yards:—

Destined for points East of Winnipeg and intended for export	105,661
For local consumption, having Winnipeg for destination	61,912
Total	167,573

Of this number 69 were found to be affected with mange.

DOURINE.

This disease has not, as yet, been detected affecting horses in this province, though, from time to time, our inspectors have inspected horses suspected of this disease, but which, upon examination, have proved to be suffering from some benign affection and not dourine.

HOG CHOLERA.

This disease was reported as being in existence on a farm in the Deloraine district, by the local veterinarian. At the time of visit three hogs were found on the premises which appeared quite healthy, but prior to time of visit 15 hogs had been destroyed on the initiative of the owner and attending veterinarian, for alleged cholera. Close inquiry could elicit no information as to a possible source of infection, no cholera having ever been known to have been in existence in the district. The three remaining hogs were placed under close quarantine restrictions, and were subsequently inspected at regular intervals, until a period of four months had elapsed, without developing indications of the disease, hence the restrictions were removed.

TUBERCULOSIS.

During the past year, I have submitted 1 pure bred Shorthorn bull, intended for export to the United States, to the tuberculin test which proved healthy. Four others were also inspected by one of our inspectors making a total of five tested for export, all of which proved healthy.

288 cattle were tested in the province by private practising veterinarians with tuberculin supplied by the Department. 125 re-acted and were earmarked in accordance with the regulations, by a regular officer of this Branch.

40 head of cattle were tested by one of our officers at the Brandon Experimental Farm, all of which proved healthy.

RABIES.

This disease was reported as affecting dogs in the Kirkella district, a dog being reported to us as showing symptoms of rabies which, prior to having been destroyed, had bitten a number of other dogs. I visited the district referred to and destroyed all dogs reported to have been bitten by the suspected rabid animal. I also removed the brain from the suspected dog, and forwarded same to the Biological Laboratory at Ottawa for inoculation purposes, the pathologist subsequently reporting same as being negative. Under the circumstances, therefore, no further action was taken.

BLACK-LEG.

This disease is reported from time to time from certain sections of the province, where it appears to be more or less indigenous. When the true nature of the disease is established no action is taken by us other than recommend owners to resort to protective inoculation of susceptible animals, and their removal from infected

pastures and the proper disposal of any carcases of animals which may have died from the disease. During the past year we have supplied 200 doses of black-leg vaccine to owners for vaccination purposes.

QUARANTINE INSPECTION DIVISION.

This division of the work consists in the enforcement and carrying out of the requirements and regulations relating to Animals' Quarantine, by regular officers of the Branch, stationed at the various Animals' Quarantine Stations, which, in Manitoba are at Emerson, Gretna and Bannerman.

At each of these Quarantine Stations the equipment consists of a substantial fenced inclosure and commodious comfortable stable accommodation, which is well lighted and thoroughly ventilated. During the past year the stables at each of the Quarantine Stations have been painted on the outside, the work being done by the caretaker, so that the stables present a neat appearance. At regular intervals, and as the exigencies require, the inside of the stables are cleansed and disinfected with limewash and carbolic acid.

All horses and mules coming from the United States, being presented for entry and inspection at the various quarantine stations here, must be accompanied by a satisfactory certificate of mallein test, in accordance with the regulations, otherwise they are detained and submitted to the test by our officers at boundary points, or, in exceptional cases, under certain restrictions, at destination. It sometimes happens, during the Spring rush of immigration, the accommodation available is not sufficient to permit all horses being tested at Quarantine Stations without causing considerable delay to incoming settlers. Under such exceptional circumstances, some entries, after careful inspection, are allowed to proceed to destination under special license, conditional that they be kept available for subsequent submission to mallein test by officers of the Department.

Emerson Quarantine Station.

This station is situated at Emerson, on the International boundary line, at a point where the Canadian Northern and Canadian Pacific lines of railway, and their American connections intersect each other. The equipment consists of a fenced inclosure 205 feet in length by 100 feet wide; stable 100 ft. x 30 ft., which provides comfortable accommodation for 45 animals. There is also a covered in shed, completely isolated which is used for the detention of hogs during the required period of quarantine.

Owing to the large number of horses and mules being presented for entry and inspection at this station, and which we were desirous of having submitted to the mallein test at boundary, it was necessary commencing with March 1, 1909, to rent a separate stable, providing increased accommodation for 25 horses.

During the past year there has been presented for entry and inspection the following number of animals:—

Horses	4,289
Mules	663
Cattle	1,343
Sheep and goats	134
Swine	10
Fees collected	$713.75

2,659 horses and mules were submitted to the mallein test, of which 27 reacted and were refused entry.

Twenty-one head of cattle were submitted to the tuberculin test, of which one reacted and was refused entry.

Gretna Quarantine Station.

This station is situated on the International boundary line at Gretna where it is conveniently placed equi-distant between the Midand branch of the Great Northern and Canadian Pacific lines of railway, each of which lines has a branch spur running into the quarantine station. The equipment consists of a substantially fenced inclosure 140 ft. in length by 120 ft. wide. Stable 100 ft. by 30 ft. providing comfortable accommodation for 45 animals, which is well lighted and thoroughly ventilated.

During the past year there has been presented for entry and inspection the following number of animals:—

Horses	1,047
Mules	172
Cattle	483
Sheep and goats	117
Swine	Nil.
Fees collected	$152.71

869 horses and mules were submitted to the mallein test, of which 12 reacted and were refused entry.

One head of cattle was submitted to the tuberculin test, which proved healthy.

Bannerman Quarantine Station.

This station is situated on the B. S. & H. B. branch of the Great Northern line of railway at Bannerman, distant from the International boundary line about three and a half miles.

The equipment consists of a substantially fenced inclosure 140 ft. in length by 120 ft. wide. Stable 100 ft by 30 ft. providing comfortable accommodation for 45 animals which is well lighted and thoroughly ventilated.

During the past year there has been presented for entry and inspection the following number of animals:—

Horses	345
Mules	2
Cattle	136
Sheep and goats	Nil.
Swine	Nil.
Fees collected	$92.60

189 horses and mules were submitted to the mallein test, of which 12 reacted and were refused entry.

23 head of cattle were submitted to the tuberculin test, all of which proved healthy.

Snowflake and Mowbray.

During the spring rush of immigration in the past year, there was also presented for entry and inspection at these points the following animals:—

Horses	46
Cattle	23

All of the horses presented for entry and inspection at these points were submitted to the mallien test, of which three reacted and were refused entry and returned to the United States.

SPRAGUE.

During the past year the following animals were presented for entry and inspection at Sprague:—4 horses, 12 cattle, 32 sheep.

The 4 horses were submitted to the mallein test and were found to react, hence were refused entry and returned to the United States.

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Summary showing total number of animals presented for entry and inspection at the various boundary points.

Horses and mules inspected	6,568
Horses and mules tested	3,767
Horses and mules reacting and refused entry	58
Cattle inspected	1,997
Cattle tested	45
Cattle reacting and refused entry	1
Sheep and goats inspected	283
Swine inspected	10
Fees collected	$959.06

MEAT INSPECTION DIVISION.

This division of the work consists in the carrying out of the various requirements of the Meat and Canned Foods Act, and the regulations relating thereto.

Inspection is maintained at four establishments here, which are engaged in an export trade in meat or the products thereof, viz:—

J. Y. Griffin Co., known as establishment	No. 18
Gordon, Ironsides & Fares, known as establishment	No. 19
Gallagher, Holman & LaFrance, known as establishment	No. 20
The Western Packing Co, known as establishment	No. 21

Ten inspectors are stationed here, three being located at each of the Establishments Nos. 18, 19 and 20, and one at establishment No. 21.

The entire time of the inspectors is devoted to this work, which consists of the ante-mortem and careful post-mortem examination of all animals intended for, or slaughtered, at these establishments, and which are dealt with in accordance with the requirements of the regulations. Close vigilance is also exercised by the inspectors over the sanitary conditions existing within the establishments, and the general cleanliness of employees and plant equipment engaged in the preparation of the various food products.

As a result of the inauguration of this service, and the effective work of our inspectors in carrying out the regulations, a very great improvement is noticeable in the sanitary conditions of the various establishments under inspection.

The necessity and importance of this work is simplified and demonstrated, from time to time, by the detection and condemnation of diseased animals by our inspectors, as a result of which the public are being largely safe-guarded from unwholesome and diseased food products.

All of which is respectfully submitted.

I have the honour to be, Sir,
Your obedient servant,

C. D. McGILVRAY,
Inspector.

The Veterinary Director General,
Ottawa.

APPENDIX No. 5.

ARTHUR G. HOPKINS, B.S.A., M.D.V.

REGINA, Sask., March 31, 1909.

SIR,—I have the honour to submit herewith my Annual Report for the year ending March 31, 1909.

From the beginning of the present fiscal year until April 9, I was at Ottawa, acting as your chief assistant, vice Dr. Hilton, who was in Regina organizing the work of the Health of Animals Branch in Alberta and Saskatchewan. On April 9, in conformance with your instructions, I left Ottawa for Regina to relieve Dr. Hilton, and was placed in charge of the work of the Branch in Saskatchewan. The work during the year has been arduous and exacting, due largely to the large number of import horses from the United States which had to be tested with mallein in addition to the handling of outbreaks of contagious diseases.

The reports of the individual officers at the boundary ports reveal the number of horses and mules which reacted to the mallein test and were therefore refused entry into Canada as being affected with glanders.

The staff under my charge in the field and at Regina has fluctuated in numbers due to various reasons, thereby increasing my responsibility and duties. Inspectors Head and Gebbie were employed in the East for three and a half months on patrol work along the International boundary against a possible invasion of Foot and Mouth disease, fortunately averted. Inspector Gray on leave of absence, Inspector Henderson temporarily and the office clerk permanently, being relieved from duty. Inspector Ayre has, in addition to occasional field work, shared with Miss Cresswell, my stenographer, the office work, and the work has been well and satisfactorily done in spite of the increased work thus placed upon their shoulders. In May last the staff was increased temporarily by Dr. R. G. Matthews being stationed at Maple Creek and given charge of the work with mange, supervising the work of Range Riders and dipping, and permanently by Inspectors H. W. Mustard and J. Fielding Cottrill, each doing good work in his particular sphere of labour. The older members of the staff are well known to you and it is unnecessary for me to refer to their work, the official records revealing ample testimony on that score. The general health of live stock in the province of Saskatchewan is good; occasionally I receive reports of cases of swamp fever, and frequently hear of severe visitations of typhoid influenza, or malarial fever in horses, this latter disease being either knowingly or unwittingly confused in some cases by practitioners with swamp fever. Navel-ill is also a cause of severe mortality in some of the noted studs of pure bred horses, which this province is noted for and is fortunate to possess. Outbreaks of blackleg have been reported from several localities. Vaccination has been advised in all cases, and vaccine supplied from the Ottawa laboratory at the regulation price of five cents per dose to owners applying for it. The vaccine has evidently given satisfaction wherever used, as not a single complaint has been received regarding it at this office.

GLANDERS.

This is the most important disease the Branch has had to deal with during the past year. Settlers' horses from the south have for years past contributed largely to the outbreaks of the disease in the prairie provinces, particularly Saskatchewan. Hitherto horses have been inspected at North Portal and as many tested as could be

by the Inspector stationed there, and those untested allowed to proceed to destination, being then followed up by the field officers of the Branch. This method while undoubtedly better than no testing, was costly to the Department, and might occasionally result in apparent hardships to a settler, for if his horses are found affected. the diseased ones are slaughtered without compensation, his teams broken and his working force badly disarranged, while if tested and rejected at the boundary he has an opportunity of perhaps securing redress and possibly making good his loss. Under your instructions I augmented the force of inspectors at North Portal by transferring Inspectors Cottril and Gebbie there to assist Inspector Mitchell. I also arranged with the Inspector in charge at North Portal to notify the Regina office by wire of carload lots or large consignments permitted to proceed to destination, with a view to having an Inspector meet the shipments at the unloading point, there testing the horses before proceeding twenty, fifty or more miles to their homesteads; this was not found to be a perfect arrangement with the limited number of Inspectors under my charge, and again at your suggestion a change was made so that shipments west of Moosejaw via the C. P. R. main line were tested at that point. The resident Inspector, Dr. J. C. McMurtry, was given help as needed, aid being rendered by Inspectors Ayre, Head, Henderson, Mountford and Ovens, as the exigencies of the situation demanded. As a consequence very few untested horses were permitted to go forward to destination; several reactors were destroyed at Moosejaw, a most difficult procedure, and one requiring much firmness and tact with owners unacquainted with the methods of the Branch in dealing with glanders in Canada; each case was well handled and the prospect of subsequent outbreaks of the disease with the consequent severe loss to all concerned, reduced to the minimum. If I may be permitted to make a suggestion, it would be to the effect that increased accommodation be afforded at the boundary for testing, so that reactors when found may be returned across the line. The necessary delay of twenty-four hours in order to test at the boundary point is no hardship but a decided benefit to the incoming settler and his live stock, the stock has a chance to rest and the settler, unless in exceptional cases, goes forward to destination with his mind at rest on the score of disease in his horses and mules. I note an increasing respect for and belief in the reliability of mallein by the profession and the laity in this province.

ANTHRAX.

Fortunately no authenticated cases of this disease have to be reported.

MALADIE DU COIT (DOURINE).

A small outbreak of this disease was reported by Inspector Gray in the Battle Creek and Coulee district, south of Maple Creek. Inspectors Hargrave, Matthews and myself proceeded to the districts and examined the suspect and confirmed the diagnosis. The affected ones were slaughtered and contacts and suspects quarantined and have not yet been released; examinations have been made of these animals periodically by Inspectors Gray and Hawke.

MANGE.

Last summer Inspector Matthews with several range riders notified the owners of mange-affected and contact stock regarding the mange regulations, and had carried out under their supervision dipping with the lime and sulphur dip. Dr. Matthews relinquished his work later, but reports were received all winter from Range Riders Donegan, Reesor, and Stirling from which it is apparent that the disease is well under control and the cattle in a far better condition as a consequence. In March, in accordance with your instructions the control of the work of dealing with mange in that portion of the mange area in Saskatchewan was transferred to Dr. Hargrave,

Medicine Hat. In this connection cars containing stock from the mange area to points outside in Saskatchewan have been disinfected by the railroad authorities and inspected by our officers.

TUBERCULOSIS.

Tuberculin has been supplied to veterinarians gratis at the request of their clients and reports received. During December I proceeded to the Experimental Farm, Indian Head, and submitted the cattle there, 49 head in all to the tuberculin test, one reactor, a purchased steer being obtained; this animal was later slaughtered.

RABIES.

Several reports of suspected rabies have been received, and investigations made by Inspectors Ayre, Cottrill, Head and myself, in the Moosomin, Fleming and Carnduff districts. Material from the brains of several dogs was forwarded in glycerine to Dr. Gordon Bell, of Winnipeg, Provincial Bacteriologist for Manitoba and to the Pathologist, Biological Laboratory, Ottawa, but the diagnosis was not confirmed in all cases. The Provincial Bacteriologist of Saskatchewan, Dr. G. A. Charlton, has also examined specimens and obtained positive results. It would seem that the brain material from a rabid animal loses its virulency or deteriorates in some way so that a positive diagnosis may be obtained from one half of a brain, and a negative from the other half. Several human patients have been sent during the year to the United States for treatment against rabies at a Pasteur Institute, although it is doubtful if in any one of the cases it was determined that the offending dog was rabid All of which is respectfully submitted.

I have the honour to be,
Sir,
Your obedient servant,

A. G. HOPKINS.

The Veterinary Director General,
Ottawa.

APPENDIX No. 6.

J. C. HARGRAVE, D.V.S.

MEDICINE HAT, Alta., March 31st, 1909.

SIR,—I have the honour to submit herewith my first annual report, as Inspector in charge, for the province of Alberta.

Until May last, 1908, the work of the Branch in the two western Prairie Provinces was directed from one office by Dr. Geo. Hilton at Regina, on which date they were separated and an office for Alberta established at this point.

Since assuming charge of the province of Alberta my time has been fully occupied, as aside from the ordinary detail work of the office, it has been necessary to make several visits to the different parts of the province, to meet and keep in close touch with each one of the staff, exercising a general, executive control of the inspections necessary throughout the province, and to give considerable time to field work on Mange and Dourine.

Shortly after the event of taking charge I accompanied Dr. Hopkins in attendance at the Maple Creek Stock Growers' Association. Was also present at the Western Stock Growers' Meeting; at both of which, matters relating to the Mange regulations and the intended action of the Department during the future were discussed.

On the 20th May, I attended the meetings of the different Breeders' Associations in Calgary.

In January, a meeting of the Central Stock Growers' Association was held in Stettler; at which meeting I was in attendance and discussed with them at some length, a number of matters relative to our work.

During May and June, I devoted considerable time to field work on Maladie du Coit, examining in the neighbourhood of 3,000 horses as gathered by the roundups, which necessitated a number of trips to various parts of South-Eastern Alberta; finding a few cases that required to be destroyed.

In connection with this work, visits were also made to Maple Creek and Maymont in Saskatchewan, and to Edmonton, Bowden, Calgary, Strathmore, Gleichen, the Red Deer river and the Cypress Hills, in Alberta.

In July, an outbreak discovered immediately East of the 4th Meridian, in Saskatchewan, was dealt with in company with Drs. Hopkins and Mathews; and again in November a trip was made with Dr. Hopkins to Maymont, to examine an animal that had been exposed to the disease before leaving Alberta.

Practically all Horse mange in the Medicine Hat district received my personal attention, necessitating repeated visits South of the Cypress Hills, in which area, a number of large herds were affected, also on the Red Deer river and in the vicinity of Irvine.

I am pleased to report that this district is almost free from the disease, there only being two premises now in quarantine and on these I think it has been successfully eradicated.

Although an endeavour has been made to have an Inspector available to make inspections of stock shipments in the south-eastern part of the province, yet it was not always possible and I found it necessary to make some 70 inspections comprising some 1,200 horses and 250 cattle. As arranged by yourself, I visited Winnipeg in March and there met Dr. Hilton, where matters pertaining to the three western provinces were taken up by him with Drs. Hopkins, McGilvray and myself.

During the first half of the year I had three Inspectors who made their headquarters at Medicine Hat, these were Inspectors White, Nyblett and Hawke. The major portion of Inspector Hawke's time was given to Dourine work, while Inspectors White and Nyblett devoted considerable time to the testing of settlers' horses.

Early in July Inspector Patton who had charge of the port of Coutts was taken to the Lethbridge Hospital where his recovery was despaired of for some time; after two months illness he was able to return to duty, although not fully recovered.

During his absence from Coutts Inspector White was placed in charge, later he relieved Inspector Pinhorn at Pendant d'Oreille for two weeks and on Inspector Gallivan leaving for quarantine work in Ontario—where he remained for over two months—he took charge of the Lethbridge district.

Owing to the amount of work to be attended to in the Lacombe and Stettler districts I, with your permission, removed Inspector Nyblett from Medicine Hat to Lacombe the 1st October, also placing him in charge of Mange district No. 13, this I think, being more practical than handling that district from Medicine Hat which up to that time I had endeavored to do.

Until late in the Fall Inspector Riddell had charge of Mange district No. 10, but it was found that his whole time was taken up with inspections of shipments at railway points and he was unable to give the attention necessary to Mange work; the district was then given to Inspector McKay whose old district No. 12, in which there was practically no mange, was divided between himself and Inspector McVeigh. This arrangement allowed Inspector Riddell more freedom so that his services were available for special duties throughout the province, and also allowed of his proceeding to Missoula with Superintendent Douglas to inspect the buffalo purchased by the Dominion Government.

As you are aware, the resignation of Dr. Warnock was handed in during March, necessitated by his accepting the nomination for the Pincher Creek Constituency. This is most regrettable as he was one of the four Inspectors authorized to deal with Dourine; with which disease he has had a large experience and has, I think successfully eradicated it from the district of Pincher Creek and the Porcupine Hills.

The reports received from some of our officers throughout the provinces indicate duties of a most ardous nature, involving as they do, long journeys and in the newly settled districts considerable exposure, more especially while testing settlers' horses; a great deal of which was done.

The work throughout the province has been heavy and with the staff available—large though it appears—has not always been kept up to date. In fact there remains to be tested an exceedingly large number of settlers' horses that will keep our officers actively engaged for some time.

Following are detail statements, in brief, of the work done by your branch in connection with various contagious and infectious diseases.

MALADIE DU COIT.

From the reports and information at present available one is, I think, comparatively safe in saying that it is well in hand and the number slaughtered during the past year would indicate that in a very short time it will have been successfully eradicated. This is probably too strong a statement to make considering the insidious nature of the disease.

The policy followed, however, is such as to prevent any possible chance of animals suspected of spreading the infection. Any animal, against which the slightest suspicion exists, is at once rigidly quarantined for a period of from one to two years and examined at least once every three months.

There is, however, one or two districts sparsely settled, in which there are a large number of stray unreclaimed horses running at large and where possibly, infected animals still exist. These areas have, however, during the past year, been ridden by

the range riders repeatedly and only in that district south and east of Lethbridge have animals at large been found infected. Small outbreaks were during the year discovered in districts where it had previously been prevalent; these totalled four in number.

One occurred near Olds; one south of Lethbridge and two south and east of Medicine Hat; the one being just east of the 4th meridian within the border of Saskatchewan. The latter outbreak was discovered by Inspector Grey of the Saskatchewan force in June, and is, I believe, the first time it has occurred in that province. Stock under range conditions roam indiscriminately over a large area, but in this case suspicion as to the probable source of infection, pointed strongly to a band of horses moved from near Coutts.

The following inspectors with myself are authorized to deal with this disease:—

Dr. Warnock, Dr. Busselle, Dr. Gallivan, Dr. Hawke.

These have during the year devoted a great deal of time to dourine inspections and a large number of horses have been examined.

The bands of horses gathered by the various roundups in the southern part of Alberta were all examined.

The following are the Alberta figures for the twelve months ending March 31, 1909:—

Number slaughtered	28
Value	$3,160.00
Compensation	$2,108.64
Number suspected and quarantined	237

Inspector Hawke has also devoted considerable time to dourine inspections in Saskatchewan where some five head were detected and slaughtered.

Statistics for Saskatchewan.

Number slaughtered	5
Value	$600
Compensation	$400
Number suspected and quarantined	44

At the present time I believe that the infected areas have not increased and I believe that the Mayton outbreak is cleaned up.

In a few of the suspected districts the horses are only gathered once a year and although examined then, still the difficulty of thoroughly examining unbroken animals is such, that one can never be sure that all infected animals have been isolated, consequently a greater length of time must elapse before it is definitely known whether such areas have been freed from the disease.

GLANDERS.

Glanders in this province is, I think, more prevalent. In fact, I am satisfied that there is a great deal more of it than the statistics would indicate; but owing to the constant demand upon the services of the Inspectors in dealing with the Mange situation, it has not been possible to devote as much time to this disease as the nature of it warrants, nor has it been possible for officers to remain sufficiently long enough in an infected district, to trace up contacts, before it becomes necessary to investigate some other urgent case. The difficulty in dealing with an outbreak among range horses is such that it is never satisfactorily completed and the reactions obtained on testing wild, unbroken horses are generally very irregular and indefinite; so much so, that it requires an officer with a natural ability or one might say "instinct" to correctly interpret them.

Fortunately the ranching area is rapidly lessening and once given to farming, or mixed farming, a better opportunity will be afforded to handle this disease in a systematic manner.

It is also much more difficult to successfully trace the source of infection under range conditions.

A somewhat extensive outbreak in the country to the south of the Cypress hills was discovered by Inspector Pinhorn and directly traceable to a horse from Montana.

The permitting of settlers' horses to proceed to destinations untested necessitated a great amount of work and unfortunately a number were lost track of entirely, and could not be found. The search for these often resulted in long, profitless journeys and occupied the major portion of our Inspector's time.

The fact that a number of reactors was found demonstrates the wisdom of this requirement and it is with regret that I have to report such a large number of these untested.

The testing of all settlers' horses at the several ports of entry, now required, will permit of the Inspectors dealing at more length with Glanders among native horses.

The following figures give the number of horses tested with Mallein and the number destroyed for Glanders for the year:—

CANADIAN HORSES.

Tested once	1,465
" second time	497
" third time	116
Destroyed on first test	158
" " second test	22
" " third test	2
" without test	2

SETTLERS' HORSES.

Tested once	1,651
" second time	167
" third time	33
Destroyed on first test	21
" on second test	18
Total value of 183 Canadian horses slaughtered	$19,933.00
Compensation	$13,288.52

MANGE.

It is possible to report a well marked decrease in the number of outbreaks of horse mange. In consequence of the stringent measures adopted for its suppression, it has entirely disappeared from many districts where it formerly prevailed; this is without doubt due to the fact that what herds were affected were easily confined within pastures, thus preventing the spread of the disease and permitting the absolute control of the stock when being treated. The majority of owners are now more familiar with its characteristics and keep a closer supervision over their herds.

Would that I were able to report as favourable a situation with respect to cattle mange. This disease demanding as it does the greater part of our Inspector's time, is the most prevalent of the contagious diseases and is a constant source of worry and annoyance, to say nothing of the large expense to your Department. While unable to say that it has been handled successfully, yet the result of the year's work is satisfactory and in some districts encouraging; and although unable to declare that any particular district is free from mange, yet a number of large herds once badly infected

are now free from it; although owing to range conditions they may become reinfected.

The policy outlined by you a year ago has been closely followed in almost every detail, and has, I thiuk, been demonstrated to be practical and to meet the approval and hearty co-operation of the stock men.

The infected area was subdivided as before into eleven districts with an Inspector in charge of each; the boundaries of which were during the summer slightly changed. In October, Inspector McKay was given district No. 10, and Inspector Nyblett placed in charge of district No. 13. District No. 12 was subdivided between Inspectors McKay and McVeigh. Deputy Inspectors are constantly examining the stock at large and in inclosures in order to detect at the earliest possible moment an infected animal.

The lime and sulphur mixture, when properly prepared continues to give results that no other preparation does and stockmen who were opposed to its use, now wish for no other.

It is, however, a difficult matter to convince a large number of the necessity of the second dipping, which coupled with the difficulty of controlling stock during the interval, often results in situations extremely annoying.

Statistics for cattle mange, year ending March 31st, 1909.

Herds quarantined	618
No. cattle	181,515
Dipped in lime and sulphur	145,152
Hand treated	2,076

Statistics for horse mange year ending March 31st, 1909:—

No. horses quarantined	2,828
No. affected	277
Dipped in lime and sulphur	4,439
Hand treated	145

TUBERCULOSIS.

As a result of the Tuberculin test applied by private veterinarians with Tuberculin supplied by the Department forty-eight (48) head re-acted, thirty-four of which were ear-marked by Inspector McKay in accordance with the regulations, the balance, fourteen, were slaughtered.

ANTHRAX.

No cases of this disease have been detected in this province during the past year.

BLACK QUARTER.

A number of cases have been reported from the northern portion of the province but it has prevailed to a very slight extent. The practice of preventive vaccination continues to be adopted to some extent, the office having disposed of 550 doses of Blackleg Vaccine.

RABIES.

I regret to have to report that this disease made its appearance within the province during the year, Inspector Nyblett having detected it in Red Deer and Innisfail during March; and Dr. Revell, the provincial bacteriologist, obtained positive results from microscopical examinations from substance taken from a suspected case. The source of infection at this date had not been determined. This outbreak is being promptly dealt with and a large area immediately surrounding the two points above mentioned, has been placed under the operation of an Order dated the 23rd March, 1909, and all dogs are effectively chained, and unclaimed or estray dogs are at once destroyed.

SHEEP SCAB.

This disease at one time very prevalent in this province is now extinct. The sheep men have, however, as a result of past experiences, acted on the defensive and each year dip their flocks.

ACTINOMOYCOSIS.

Reports have frequently been received as to the existence of the disease, more particularly from the mixed farming sections, but not to any serious extent.

As your Department does not deal with it, the complaints are referred to their respective Local Boards of Health, the only action taken by your officers being to prevent their shipment.

QUARANTINE STATIONS.

In the province these are three in number:—

Twin Lakes with Inspector Christie in charge.

Coutts with Inspector Patton in charge.

Pendant d'Oreille with Inspector Pinhorn in charge.

At Pendant d'Oreille three (3) reactors and twelve (12) contacts were refused admission.

At Twin Lakes nine (9) reactors and fifteen (15) contacts were refused admission and at Coutts twenty-two (22) reactors and thirty-two (32) contacts were returned to the United States.

INSPECTION OF STOCK, CARS AND YARDS.

The latter is attended to by James F. Robb who has succeeded in having them kept clean and in a sanitary condition. The inspections of stock shipments in the restricted area to points in or out as well as the regular superintending of the cleansing and disinfection of cars carrying stock shipments, have been numerous and exacting, occupying a great deal of time. In addition to the regular Inspectors, the services of three resident veterinarians have been made use of for this purpose, at Macleod, Claresholm and High River.

All stock cars reaching Calgary are held, cleansed and disinfected before being used again.

I have the honour to be,
Sir,
Your obedient servant,

J. C. HARGRAVE,
Inspector.

The Veterinary Director General,
Ottawa.

APPENDIX No. 7.

S. F. TOLMIE, V.S.

VICTORIA, B.C., March 31, 1909.

SIR,—I have the honour to submit my report for the year ending March 31.

Gateway.—The imports at this port show a considerable falling off as compared with previous years. This is due largely to the opening of the port of Kingsgate. Settlers entering Canada from Washington and destined for prairie points usually come via Spokane and when travelling via Kingsgate are enabled to secure more satisfactory transportation facilities than when entering by way of Gateway, where a transfer from the Great Northern to the Canadian Pacific Railway is necessary shortly after entering Canada.

During the year 202 horses, 2 mules and 2 cattle were entered at this port. Two of the above horses were stolen animals smuggled into the country and were inspected by Dr. Bell at Fernie.

Kingsgate.—At this port 735 horses, 20 mules and 109 cattle and 505 sheep were inspected. During the year the stable at this station was painted and the fences were whitewashed and it is now in first-class condition.

Nelson.—11 horses, 176 cattle and 785 sheep were inspected at this port. The importance of Nelson as a live stock port of entry has also been reduced by the opening of Kingsgate.

It was found necessary to make some small repairs to the foundation of the quarantine stable and now the plant here is in good order.

Rossland.—45 horses, 181 cattle and 285 sheep were inspected at Rossland. The station at this point which is a rented one is not very satisfactory owing to its low situation, the entrance frequently becoming blocked by drifting snow during the winter months. More suitable premises will if possible be recommended to you before next winter.

Inspector Frank who has charge of Nelson and Rossland rejected 3 cattle on tuberculin test during the year. 3 horses were rejected on Mallein test, 8 other horses accompanying the re-actors were returned to the United States and were not again presented for entry. 9 horses were tested the second time before being permitted to enter, and two other horses which had been permitted to proceed to their destination under special license were tested. 13 swine were refused admission on account of not being accompanied by the necessary certificates.

53 stock cars were cleansed and disinfected under the supervision of Inspector Frank.

Grand Forks.—At Grand Forks 49 horses, 2 mules and 80 cattle were inspected.

Midway.—37 horses and 51 cattle were inspected at Midway. 19 stock cars were cleansed and disinfected under the supervision of Inspector Tamblyn during the year.

Myncaster.—26 horses, 19 cattle, 35 sheep and 25 swine were inspected during the year at this port. Of these 7 horses were rejected on Mallein test.

A stable for testing purposes is rented at Myncaster. It is conveniently situated and is fairly suitable for the purpose.

Bridesville.—43 horses, 178 cattle and 2,407 sheep were inspected at Bridesville. Of these 4 horses were rejected on Mallein test.

A proper testing stable is required at this point and I am now negotiating with the Great Northern Railway with a view to securing a suitable site for the purpose.

Chopaka.—At Chopaka 46 horses and 9 cattle were inspected. Of these 2 horses were rejected on test.

This station is inconveniently situated being several miles from the nearest hotel and stable accommodation, consequently all inspections for this port have been conducted at Keremeos.

Osoyoos.—260 horses were inspected at Osoyoos. Of these 151 were entered for temporary stay and 109 were subjected to Mallein test. Of the latter 2 were rejected. 17 cattle were inspected. Of these 11 were tested and all passed the test. 1 mule and 200 sheep passed inspection also.

The new quarantine stables and yards are proving a great convenience at this port.

New Westminster and sub-ports.—2 burros, 674 horses, 143 cattle, 7,246 sheep, 5 swine, 12 mules, 1 camel and 18 goats were entered at New Westminster and sub-ports. The burros came from Mexico and besides being tested were subjected to a very careful examination for ticks. None were found, but as an extra precaution the animals were clipped. All the hair was burnt and a liberal dressing of mange mixture as prescribed by the department was applied all over them.

Vancouver.—234 horses, 4 mules, 2 cattle, and 16,586 sheep were inspected here.

Rented stables are utilized at this port for testing purposes. They are fairly satisfactory. Since the Red Water investigation commenced Mr. W. Kinimmonth has been placed in charge at this station and the experimental animals kept here.

Victoria.—At Victoria 196 horses, 76 mules, 6 cattle, 14,422 sheep, 6 deer and 2 swine were inspected. 1 horse was rejected on mallein test. The mules were nearly all consigned to the Coal Mines at Nanaimo, Ladysmith and Union.

HOG CHOLERA.

This disease was encountered on 19 premises; 164 swine died and 381 were slaughtered. Compensation was paid on them.

GLANDERS.

This disease was found on 11 premises; 19 horses were destroyed and compensation was paid for them.

MANGE.

Mange was reported once, the horses in question having contracted the disease en route to British Columbia. When examined the animals were found to have been treated and about cured. They were kept isolated until all further danger of the disease was passed.

SHEEP SCAB.

Three flocks of sheep numbering 1,187 altogether, 988 head of which belonged to one firm, were quarantined for scab. Owing to the lateness of the season little other than hand dressings could be done but the outbreak will be vigorously dealt with as soon as the weather permits.

RED WATER.

This disease has been investigated during the year by Dr. Bowhill. You now have a full report of this work. Several animals were purchased for experimental purposes and an experiment station has been established at Vancouver. Some valuable information has been gathered regarding the disease. Red Water has caused serious loss in a few districts in British Columbia for some years past. Several reports of suspected contagious disease have been received and dealt with in various parts of the province. In many instances the reports were found to be groundless on investigation. One animal for export to the United States was tested and was given a certificate.

I have the honour to be,
Sir,
Your obedient servant,

S. F. TOLMIE,
Inspector.

The Veterinary Director General,
Ottawa, Ont.

APPENDIX No. 8.

C. H. HIGGINS, B.S., D.V.S., PATHOLOGIST.

OTTAWA, March 31, 1909.

SIR,—I have the honour to transmit this my report covering my duties as pathologist and officer in charge of the Biological Laboratory of the Department for the past year.

The year just ended has been of more than ordinary interest as my work has shown a great increase in all of its various lines and it is most gratifying to know that it has increased its importance to the Health of Animals Branch. A much larger number of specimens than formerly has been received for examination, totalling 376 series. While this number may appear small when compared with the examinations made by similar institutions, it is in reality large for each series usually means the minute examination of a number of separate specimens, or a series of animal inoculations involving a clinical record and pathological diagnosis in each instance.

Decisions necessitating detailed technical studies before formulating a definite opinion have been required from time to time and the information gained by these studies has been of benefit to the Branch. The diagnoses required by the Meat Inspection Division on controversial matters have proven very interesting features of the work of the laboratory and in some instances have presented problems requiring minute investigations.

The technicalities surrounding the preparation of the various biological products manufactured by me during the year have in some instances been difficult of solution, however, the greatest of these have been surmounted and an uninterrupted supply sufficient to meet the steadily increasing demands from your office has been maintained. Detailed information concerning the disbursements from the laboratory will be given in connection with my remarks on each product, but it may be of interest to note that 1,051 registered packages containing these products have been sent from the laboratory during the year.

The future needs of the laboratory are more pressing than ever in its history. The available space in the building has been subdivided to accommodate the various lines of work as isolated rooms were required for the separation of the virulent infections from our manufactured products, until at present there is no further space available for expansion within the walls of the present structure. As our work increases, more room will be required and I believe that it is now advisable to consider a scheme that will provide the necessary space and facilities for its more economical conduct. The present building, however, has enabled the working out of many details absolutely necessary prior to the development of a larger institution. Until recently the extent of our various operations has been on such a limited scale that gas has proven the most suitable means of carrying on the details, but at the present time I believe that we have reached a point where it is advisable to consider economy in methods commensurate with the scale on which the present routine of the laboratory is conducted. While gas is absolutely essential for the carrying out of many of the minor details in any laboratory, it does not provide us with an economical means of heating our large incubating rooms nor for the various processes required in the cooking and sterilization of large quantities of nutrient culture media.

Not only are the laboratory facilities becoming inadequate to the increasing demands occasioned by the increase in the work of the whole branch, but there is also

an urgent need for additional assistance that investigations other than those necessitated by the routine may be taken in hand. Close observation reveals that similar institutions provide an opportunity to pursue original studies, while at this laboratory such studies have assumed a secondary place as the time of myself and my assistant is fully occupied in the manufacture of biological products, the examination of material received for diagnosis and in the various clerical duties connected therewith.

It has been repeatedly demonstrated at this laboratory that practical results are only possible where the details of an investigation may be continued over an extended period without interruption. Investigations have been taken in hand at various times only to be set aside on account of the routine demanding my undivided attention in the solution of the many problems that have been presented, and the loss in ultimate results has been considerable. Not only has there been a loss in results, but the expense necessitated at the inception of such studies, in chemicals, gas and the time required for the fitting up of special apparatus, has not been compensated for as the investigations are still incomplete.

There are many lines of work open for investigation that cannot fail to add to our knowledge of diseased conditions, which should be seriously considered. Rabies should receive consideration other than that necessary for the establishing of the diagnosis in each instance. The subject of tuberculosis is before the scientists and laity of the world and we should aid in the practical solution of some of the technical problems presented. Tuberculosis in fowls is gaining increased foothold in Canada and a more detailed knowledge of the modes of infection may aid in a solution of this serious question.

Many problems are presented by the Meat Inspection Division, the more detailed consideration of which cannot fail to be of value to all the interests concerned therewith. Indeed, so many fruitful lines of research are open that their further detailed enumeration will serve no useful purpose, it being sufficient to state that while this laboratory is at present indispensable, its value to the Branch can be increased many fold by a more minute study of animal diseases and their relationship to the livestock interests than has heretofore been possible.

That a more intimate knowledge of laboratory methods may be gained by officers of the Branch, it may prove advantageous to systematically detail various inspectors for work at the laboratory. It is probable that much good would result as inspectors with a detailed knowledge of laboratory requirements could make a better selection of material for diagnostic purposes and with the increased knowledge that can only be obtained at a laboratory they would make better inspectors for many special field investigations. Aside from these advantages we would be in a position to select those showing marked proficiency in this specialized work for temporary or permanent service at the laboratory.

In September last, acting on your instructions, I attended the annual meeting of the American Veterinary Medical Association held in Philadelphia; later, with your approval, I was privileged to attend the International Congress on Tuberculosis at Washington, where I met scientists of repute from various countries engaged in technical studies similar to those confronting me at this laboratory. The interchange of ideas then possible, together with the acquaintances made, have already proven of mutual benefit. Not only was it possible for me to meet laboratory workers while absent from Ottawa, but an opportunity was also provided to familiarize myself with the facilities supplied investigators in other laboratories and also to observe their methods, not only in the management of their laboratories but in the carrying out of the details of the work.

During the International Congress I served by special request as one of the Committee on Awards to judge the pathological exhibits which were of a very high order.

Shortly after my return from Washington, accompanied by Inspector Perdue, I visited Ames, Iowa, reaching there on October 12, to witness a demonstration by the

United States Bureau of Animal Industry on their method of immunizing hogs against hog cholera. Besides Dr. Perdue and myself there were present: Dr. A. D. Melvin, Chief of the Bureau; Dr. M. Dorset, Chief of the Bio-Chemic Division of the Bureau; Dr. Niles, in charge of the Ames Experimental Station and his staff; Dr. Austin Peters, chief of the Massachusetts Cattle Bureau; Dr. M. E. Knowles, State Veterinarian of Montana; Dr. L. M. Prine, Veterinarian to the State Experiment Station of Wyoming, and Dr. Wright, State Veterinarian of Illinois.

This Experimental Station at Ames was established by the Bureau of Animal Industry for experimenting with hog cholera and has recently been used to demonstrate the facilities required in the preparation of a serum for its prevention and treatment in the field. I was very grateful for the privilege of attending the demonstration and also for the many courtesies extended to Dr. Perdue and myself by the Chief of the Bureau and his officers during our short stay at Ames.

The finding of deSchweinitz and Dorset that hog cholera is the result of an infection with an ultra-miscroscopic filtrable virus and not to the bacillus studied on this continent by Salmon, Smith and Moore has been substantiated by Dorset, Bolton and McBride in America, the laboratory of the Board of Agriculture in England, Hutyra, Uhlenhuth, Xylander, Hubener, Bohtz, Carre, Leclainche and Vallée in Europe and by Theiler in South Africa.

Working on the basis of the ultra-microscopic, filtrable causative agent, the fact that it is possible to secure an increased resistance to the naturally or artificially produced disease does much to substantiate the correctness of this view. These findings are also in accord with my experiments of 1902 that the diagnosis of the disease by agglutination methods is unreliable.

The experiments at Ames under Dr. Dorset's direction are but evidences of the practical results possible from unrestricted scientific investigations, although it appears to me that further studies are necessary before this method of immunization can with economy be applied for the protection of susceptible animals in a locality where the disease is frequently observed.

The recent report of King, bacteriologist to the Kansas State Agricultural College Experiment Station is worthy of careful study, containing as it does many points of more than passing interest. In this experimental work King has used the horse for the attenuation of the virus required for purposes of immunization. He has found that serum, withdrawn from a horse injected with virulent virus twenty-four hours previously possesses preventive properties when injected subcutaneously into hogs and that horse serum withdrawn four hours after the injection of virulent virus also acts as a preventive when injected subcutaneously in small quantities. The twenty-four hour horse serum, however, is not constant in its protective properties. He also finds that the immunity thus acquired extends over a period of from three to eight months. A report upon the practical results from the application of this method is promised for an early date.

From a study of the investigations in the immunization of hogs against hog cholera, it does not appear to me that it would at present be wise to institute a change from the methods now practised for its control in Canada. I am, however, of the opinion that while there are many points connected with the experimental data at hand requiring elucidation, the ultimate results will be successful from the practical as well as the technical standpoint.

In November, during the outbreak of foot-and-mouth disease in the United States, it was possible for me to render assistance by visiting various boundary points and aid the organization of the inspection work, at the same time pointing out the duties of the inspectors in charge that their instructions to subordinate officers would be more uniformly enforced. To this end I visited various points in provinces of Quebec and Ontario.

At Detroit, on December 2nd last, en route from Sarnia to Windsor, I was able

to confer with Dr. Mohler, Chief of the Pathological Division of the Bureau of Animal Industry and Dr. M. J. Rosenau, Director of the Hygienic Laboratory of the Public Health and Marine Hospital Service at Washington. At this interview I learned of what appeared to be the probable source of origin of the outbreak and this information later proved valuable when tracing certain Canadian cattle shipped to Buffalo, that, earlier in the investigations of the United States authorities were suspected of being responsible for the outbreaks at Watsonstown and Danville, Pennsylvania. Subsequent events fortunately removed the suspicion attached to these cattle of Canadian origin and we are now aware that it was founded on circumstantial evidence alone.

BIOLOGICAL PRODUCTS.

Mallein.

During the year the disbursements have shown a marked advance over that of any previous period in the history of the laboratory, 32,815 doses having been sent out on instructions received from your office. Facilities considered adequate for the preparation of this product two years ago have long since been taxed to their utmost capacity for it was not then considered that necessity would require the doubling of our output within at least eight years but the rapid growth of the Western Provinces and the continuation of your policy of testing all horses brought into the country have been the means of so increasing the demand for this product that it has already reached a figure more than twice that of two years ago.

The appended statement gives our disbursements for three years and also the distribution by provinces for the past year.

	1906-7.	1907-8.	1908-9.
April	1,370	1,750	3,861
May	702	1,600	3,140
June	1,400	1,308	2,720
July	1,645	2,205	3,000
August	1,730	1,675	2,347
September	1,786	1,150	2,200
October	1,245	1,835	1,935
November	598	1,895	2,567
December	225	553	1,420
January	712	2,090	905
February	830	1,320	1,260
March	2,060	3,565	7,460
Total	14,303	20,946	32,815

Maritime	225
Quebec	893
Ontario	1,757
Manitoba	7,800
Saskatchewan	12,000*
Alberta	7,800
British Columbia	2,030
Yukon	80
	32,815

* For the month of April this includes the amount sent to Dr. Hilton for use in Saskatchewan and Alberta (1,500 doses). The two provinces have been administered separately since May 1, 1908.

Tuberculin.

The disbursements of tuberculin have been made as requested by your office from that prepared at the laboratory and show an increase over those of any preceding

year. Little difficulty is experienced in its manufacture and aside from the *old tuberculin* prepared for disbursement from an organism of bovine origin, I have also prepared a bovine bacilli emulsion. This bacilli emulsion has been used on cases of localized tuberculosis in the human being by medical practitioners who report satisfactory therapeutic results. Special precipitated tuberculin for opthalmic tests has also been prepared in sufficient quantity for experimental purposes. Little trouble would be experienced in the preparation of any of the special tuberculins used in veterinary and human medicine with but very little additional equipment.

A detailed monthly statement of the disbursements for the past three years is as follows:—

	1906-7.	1907-8.	1908-9.
April	267	509	878
May	349	848	829
June	160	206	922
July	184	257	1,190
August	161	336	323
September	254	583	214
October	118	276	458
November	423	565	826
December	336	735	807
January	589	562	322
February	437	575	257
March	152	482	1,035
Total	3,430	5,934	8,061

Black-leg Vaccine.

During the year there have been forwarded from the laboratory as directed by your office, 8,064 doses of black-leg vaccine. This is a slight increase over the amount disbursed during the preceding year and the use of this product is likely to become more general when it becomes known that it is manufactured at this laboratory and disbursed on order from your office at such a nominal figure.

A detailed statement for the year just ended and that of 1907-8 is as follows:—

	1907-8.	1908-9.
April	250	2,185
May	392	1,177
June	554	601
July	392	572
August	254	550
September	586	734
October	998	260
November	785	218
December	1,560	410
January	....	35
February	270	420
March	990	902
	7,031	8,064

That the results following the use of this vaccine are satisfactory needs no further proof than the fact that the vaccine disbursed during the year just ended has been forwarded in many instances to those who had used it during the previous year, none of whom have complained that the vaccine is inert. Some complaints have been

received covering certain minor features connected with the disbursements and in each instance steps were immediately taken to remedy the defect complained of.

Very little difficulty is experienced in its preparation and with each lot prepared I am able to overcome technicalities that at first seemed unsurmountable.

Anthrax Vaccines.

There have been disbursed from the laboratory during the year just ended, as requested by your office, 464 doses of each of the first and second anthrax vaccines. It is gratifying to learn that this amount is less than the amount disbursed at any time since the laboratory has been charged with supervising the individual shipments and more recently with the manufacture and distribution of the product. A detailed statement of the disbursements of the anthrax vaccines prepared at this laboratory during the past two years is as follows:—

	1907-8.	1908-9.
April	239	
May	17	
June	....	
July	98	265
August	77	75
September	5	10
October	15	43
November	....	
December	32	25
January	....	10
February	....	
March	....	36
Total	483	464

The drying of this vaccine on threads and its disbursement on a metal clip attached to a cork of a sterile vial has proven a very satisfactory and convenient means for its distribution. So satisfactory has this method proven that its continuance is fully justified. In no instance have we learned of untoward effects following its use and our laboratory experiments still indicate its efficiency in protecting against a virulent infection subsequently administered.

PATHOLOGY.

The features of the work of the laboratory that may be considered of a strictly pathological nature are very varied and deal with the examination of many tissues and body fluids in the determination of the cause of death or the alteration of the tissue in specific instances. Much of this work is of such a character that it would add little interest to this report although we have dealt with some interesting tumour formations forwarded by inspectors for diagnostic and museum purposes. Some of these are of more than ordinary interest and I will, therefore, present a detailed description of a few together with their origin and frequency of occurrence. Specimens of cysticerci (measles) are received from time to time and I am selecting the best of these for permanent museum preparations. Photographs showing the invasion of various tissues are presented herewith and beneath each is a full description concerning the origin and the nature of the lesion.

An Endothelial Tumour.

1025. Forwarded by Inspector Kellam from Montreal.

History.—Copy of Inspector Kellam's report concerning the lesions caused by the tumour formation.

SIR,—I have the honour to inform you that I am forwarding a few lesions for examination. The specimens sent are typical in appearance but not in size, and were taken from the peritoneum in the region of the upper flank, rumen, omentum and diaphragm. The animal was an aged cow in fair condition, pregnant about the sixth month, abdomen pendulous. Post-mortem.—All organs in a healthy condition except the liver, spleen and peritoneum. The parietal portion of the peritoneum was literally covered with growths varying in size from a pea to half a bushel. Two of the growths were considerably larger than a half bushel. The smaller lesions were sessile, of a uniform white colour and firm consistency. Those from the size of a pea to a pigeon's egg and up wer cystic, pedunculated, having a strong fibrous capsule, within which was a gelatinous substance white or pale yellow and in the centre was a quantity of pale yellow fluid.

The peritoneum covering the uterus, spleen, liver and intestines was seriously involved.

The growths were not found on any membrane except the peritoneum, and there were enough of the growths to nearly fill a two-bushel basket.

Kindly inform me of the nature of the lesion.

I have the honour to be, etc.,

(Sgd.) M. J. KELLAM.

Diagnosis.—Multiple endotheliomata. For details of the microscopical structure of this tumour refer to Plate I, Fig. 1.

Remarks.—It is unfortunate that the larger portions of this interesting tumour formation were not furnished for permanent preservation or that a photograph is not available for purposes of reproduction. The literature gives us but few references to the occurrence of endotheliomata in animals. In Kitt's pathology but a single reference is given to the occurrence of a similar tumour in a cow, as follows,—'Kunnemann reports a psammoma of the cranial dura mater about the size of a duck's egg, overlying the anterian part of the brain of a cow.' The writer has examined a number of endotheliomata from the thoracic and abdominal cavities of fowls.

Endotheliomata are very closely related to the cancers although they rarely form metastases. They originate from the mesoblastic cells while cancer formations come from the cells of the ectoderm or entoderm.

This specimen is interesting, not only from its comparative rarity in the lower animals but also from the fact that such large masses were formed during its growth within the abdominal cavity.

Carcinoma.

1145.—Source.—The tumour in question (see Plate IV, Fig. 2) was accompanied by the following letter of transmissal:—

WINNIPEG, March 21, 1908.

SIR,—I am forwarding by express to-day to the Biological Laboratory, a specimen received from Inspector Ross at Establishment No. 20, being a tumour found in the rumen of a cow.

I have the honour to be, etc.,

(Sgd.) C. D. MCGILVRAY.

We have nothing in our records indicating that other lesions were present in this animal.

Diagnosis.—An examination of the tumour formation reveals the structure of a gelatinous carcinoma sometimes incorrectly termed 'colloid cancer' (see Plate I, Fig. 2.)

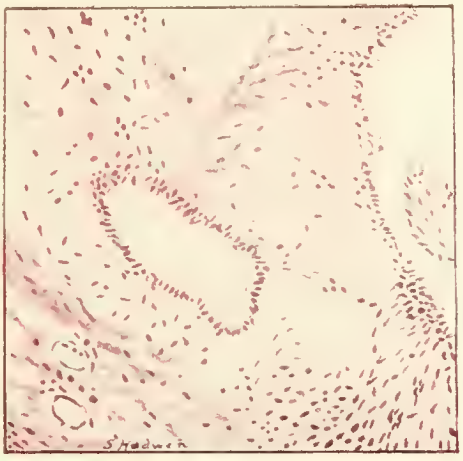


Fig. 1

1025 ENDOTHELIOMA. (Multiple)

Presented by Inspector Kellam. Size, from that of pea to one foot in diameter.

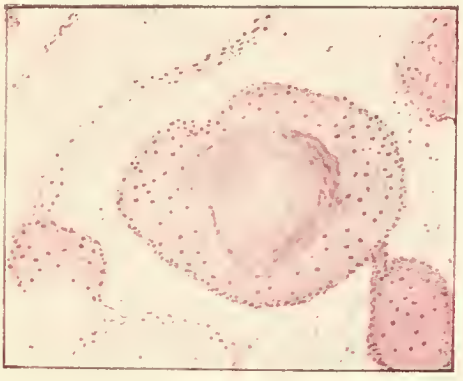


Fig. 2

1145—GELATINOUS CARCINOMA

Presented by Inspector Ross. Weight, 1,800 grammes.

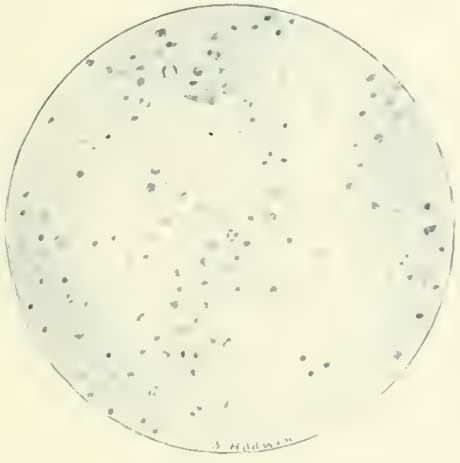


Fig. 1

1063—SARCOMA

Presented by Inspector Pine.

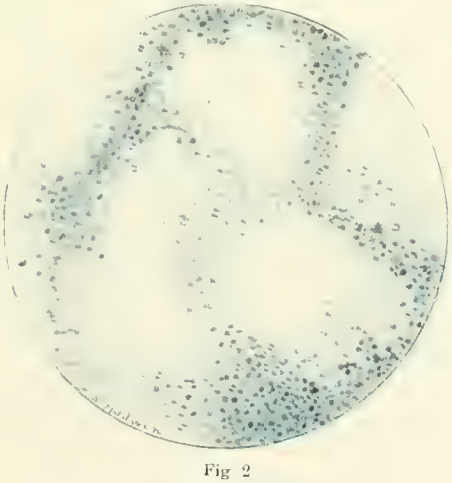


Fig 2

880 ROUND CELLED SARCOMA

In a fish (Pike). Presented by Inspector Fisher.

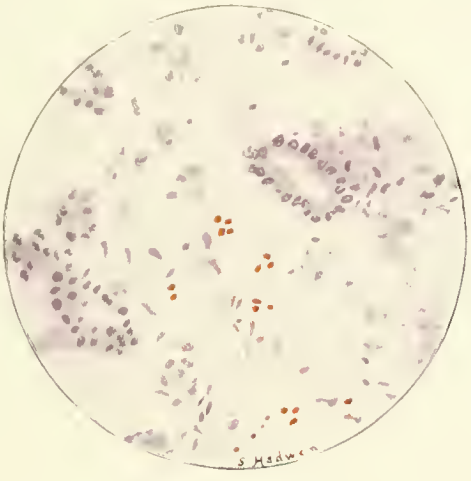


Fig. 1

1066—ADENO-SARCOMA

Weight, 6 ounces. Presented by Inspector Walsh.

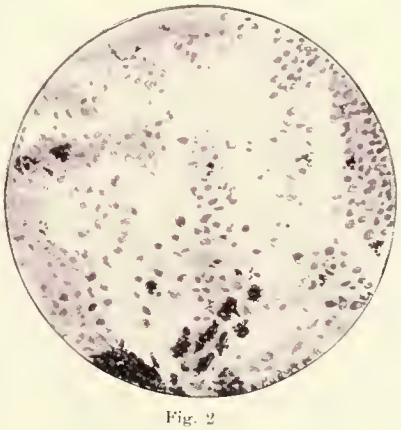


Fig. 2

997 MELANOSIS

Pigment in lymph gland of a red steer. Presented by Inspector Bruce.

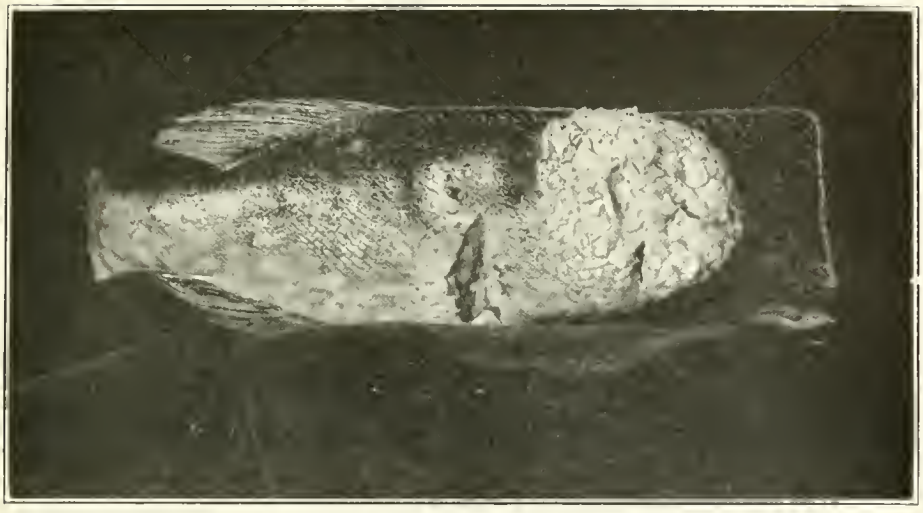


Fig 1

880—SARCOMA IN A PIKE

See also Plate II, Fig. 2

Fig. 2

1145—CARCINOMA FROM THE RUMEN OF A COW

Weight, 1,800 grammes. See also Plate I, Fig. 2

1010—MEASLES OF THE OX

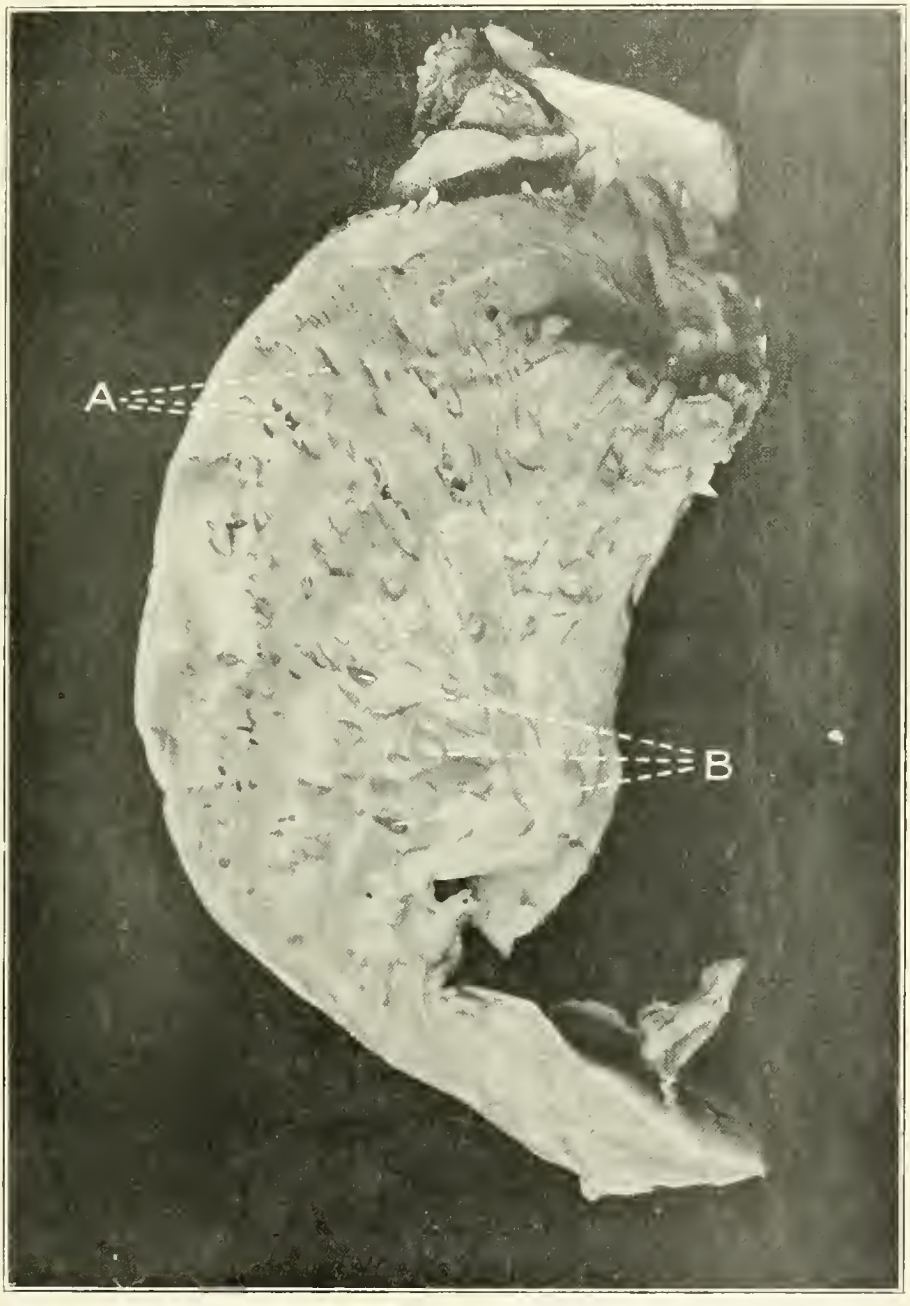
Cysticerci embedded in the tissues of the heart. A, shows cysts just beneath the epicardium. Specimen forwarded by Inspector Fisher for the laboratory museum.

1010—MEASLES OF THE OX

Cysticerci embedded in the tissues of the heart. A, A¹, shows cysts deep in the musculature. B, B¹, shows cysts just beneath the endocardium. This is the cystic or resting stage of the parasite which forms the Tænia saginata, or the unarmed tapeworm of man.

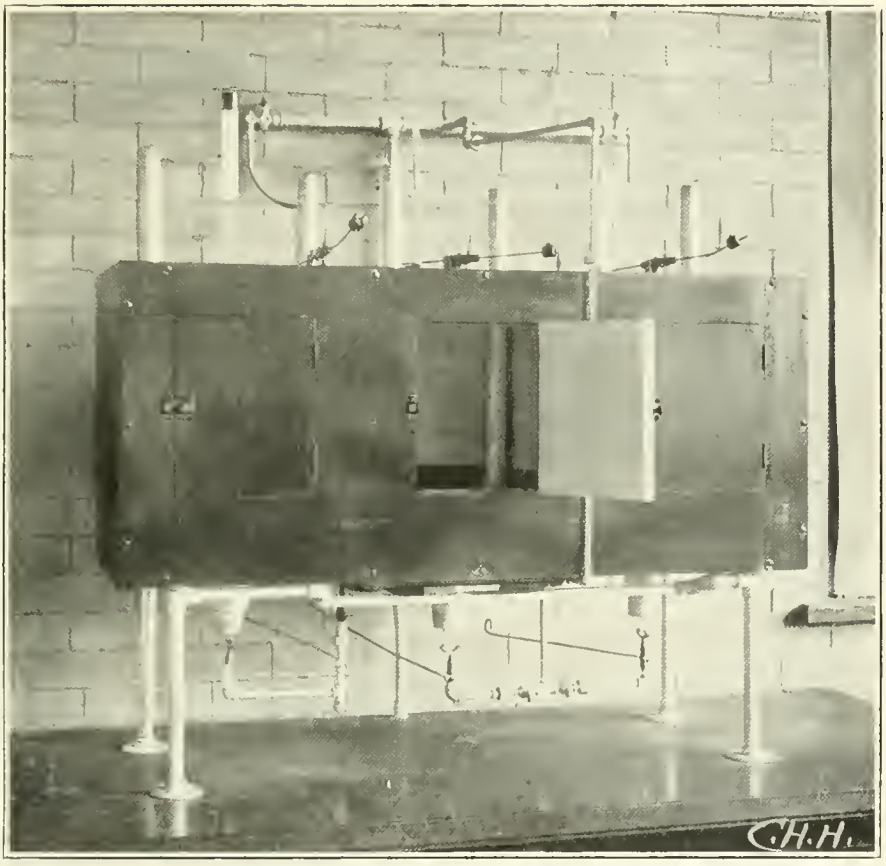
1269—MEASLES OF THE HOG

Cysticerci embedded in the heart. The cysts are very numerous and are readily distinguished in the photograph. This is the cystic or resting stage of the parasite which forms Tænia solium (the armed tapeworm) in man. Specimen forwarded by Inspector Ross.

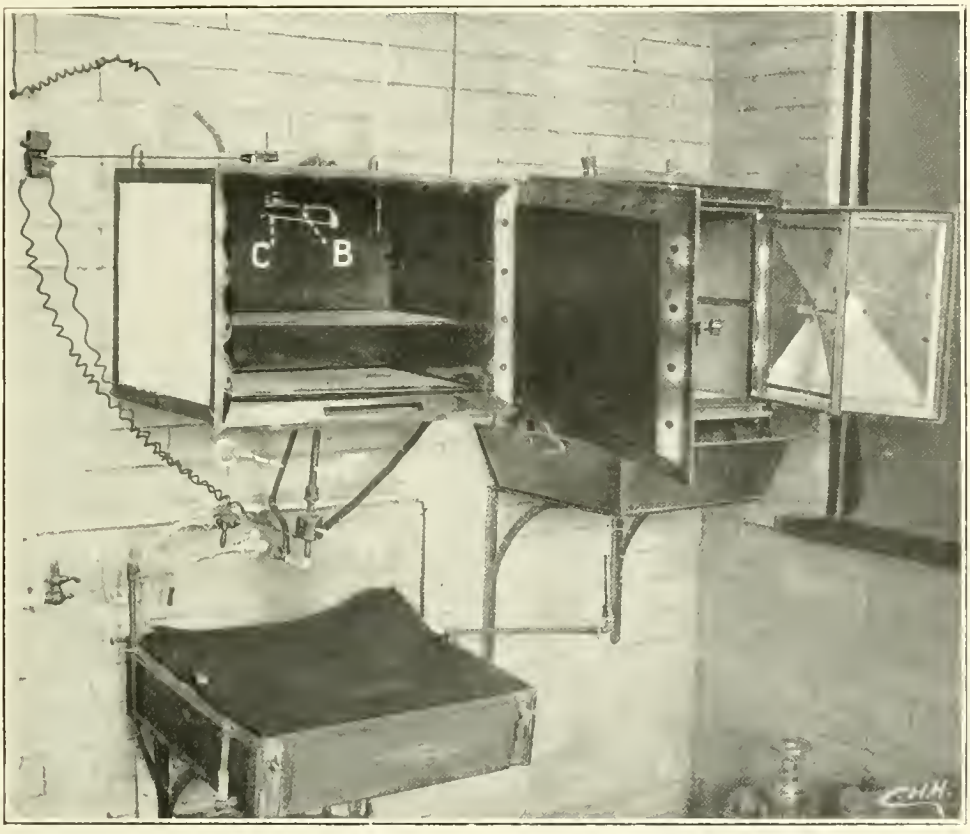


1269—MEASLES OF THE HOG

Cysticerci embedded in the muscles of the tongue. A, shows cavities left by the falling out of the cysts. B, shows the cysts in place. Specimen forwarded by Inspector Ross.



Incubators for maintaining constant temperature from 30 to 50° C. (=86—122° F.). In this type of incubator the temperature expands a liquid confined between two brass wafers, and by a system of levers this is communicated, first, to the balanced lever shown at the top of the chamber, and from its end, by a wire, to the lever actuating the gas valve. Each of the three chambers may be controlled independently of the others. In the central one, the door of which is open, the attenuation of anthrax has been successfully carried out, and this fact in itself will indicate the accuracy with which the temperature may be maintained. (*See also Plate X*).



Hot air sterilizer, fitted with automatic controlling device which prevents over-heating. A is the automatic gas valve; B, the double wafers which are filled with a liquid expanding at the desired temperature; C, the lever which actuates the lever D; D, the lever making the electric contact at E which closes or opens the electric valve at A. F is the bunsen burner supplying the heat; and G is the pipe carrying the pilot light. The pilot light burns continuously when the apparatus is in operation, and lights the gas burner F when the gas is turned on.

The principle of controlling the heating device in the large laboratory incubator is similar to that shown and described above.

Remarks.—The occurrence of carcinomatous tumours in bovines is not considered at all common. This is partially due to the fact that bovines are short lived animals and cancers are usually considered as tumour formations appearing in middle and later life. Kitt gives their frequency of occurrence among animals as compiled from statistics by Casper, Frohner and Sticker, as appearing most frequently in dogs (three per cent), horses next and then cats. They are infrequently observed in cattle, sheep, goats and swine. Cancer of the stomach and of the female urogenital organs in the human are far more frequently observed than in other tissues although primary cancer has been observed in all epithelial structures. Metastases may appear in organs normally containing no epithelial cells.

In the case of the tumour formation under consideration the localization of the tumour was doubtless due to the fact that the age of the animal had not provided the necessary time for metastases to form in other tissues or organs. The tumour is of particular interest on account of its infrequent occurrence in bovines.

Sarcoma.

Quite a number of sarcomata have been examined at the laboratory from time to time. Sarcomata are tumours made up of cells which retain their embryonic characteristics and whose tissues show no tendency toward maturation. One characteristic is the tendency to the formation of metastases which as a rule follow in the general direction of the blood current. Microscopic variations are also observed which in a large measure are due to the histological structure of the tissues in which they occur. Of the entire number which we have examined a few only will be mentioned from some of which coloured drawings have been made of their microscopical appearance.

1063. Forwarded by Inspector T. M. Pine, London, Ont. History. The animal in question was a steer slaughtered at an establishment under inspection and the location of the lesion was in subcutaneous tissue. The tumour was circular in form being six centimetres in diameter and one centimetre thick. The portion received was from the region of the hock, similar lesions extending up the quarter to within a foot of the tail. No lesions were observed in the internal organs or in the lymphatic system.

Diagnosis.—Sarcoma. A detailed study of the structure may be made from the coloured drawing (Plate II, Fig. 1.)

880. Specimen forwarded by Inspector Fisher from Carleton Place, Ont.

History.—The fish in question (Plate IV, Fig. 1) was caught in Mississippi Lake near Carleton Place and it is reported to be a usual occurrence to catch fish with similar tumours in this body of water which is really a broadening out of the Mississippi river at this point.

Diagnosis.—Some difficulty was experienced in arriving at a diagnosis but a detailed study of its microscopic structure has led to its being classed as a sarcoma. A drawing in colours is shown in Plate II, Fig. 2.

1066. Adeno-sarcoma. This specimen was forwarded by Inspector Walsh and is an example of a number which we have received showing a similar structure and involving the kidney of the hog.

History.—As all specimens of this class of tumour have been found at the post mortem examination of hogs slaughtered for human consumption, little is known of the previous history of the affected animal. The tumour mass in this instance weighed six ounces.

Diagnosis.—The microscopic examination revealed it to be an adeno-sarcoma and aside from the tumour mass a considerable portion of the kidney itself was involved. The detailed microscopic structure of the tumour may be studied in the accompanying coloured drawing (Plate III, Fig. 1).

997. Melanosis.—A specimen forwarded for examination by Inspector Bruce.

History.—Strictly speaking this specimen cannot be considered as a tumour nor is it a sarcoma, being merely the abnormal deposit of pigment in tissues ordinarily free from such an invasion. As pigmented tumour masses usually develop into sarcomata it is described here. The autopsy finding of Inspector Bruce is included in the following letter of transmittal:—

MONTREAL ABATTOIR CO., November 19, 1907.

SIR,—I have the honour to inclose specimens of the hepatic gland, diaphragm, costal pleura and kidney fat taken from a red steer, age undetermined, and which I take to be a case of melanosis. The bones appeared to be normal and the carcase was well nourished. I may state that this is the first case that has come under my observation out of the thousands inspected since my arrival in Montreal.

I have the honour to be, etc.,
(Sgd.) E. A. BRUCE.

Diagnosis.—Melanosis.—The examination of various portions of the tissue invaded with this deposit revealed no abnormality in the arrangement of the cells. The pigment was easily distinguished as shown in Plate III, Fig. 2, and chemically responded to the tests for menalin. As menalin is the product of cell activity it is classed as a metabolic product.

1152. Melano-sarcoma. Specimen forwarded by Inspector Bruce from Hamilton, Ont.

History.—The letter of transmittal from Inspector Bruce furnishes all of the information which we have in this connection:—

HAMILTON, ONT., April 2, 1908.

SIR,—I beg to inclose herewith a portion of the abdomen of a male hog on which were black spots of a nature that I do not understand. I shall be glad to get a correct diagnosis as the condition is one that has not come under my observation previously.

I have the honour to be, etc.,
(Sgd.) E. A. BRUCE.

The spots referred to in the above communication covered but a very small area (6 sq. cm.) and were 0·5 cm. thick. They were nodular in shape, soft and intensely black in colour.

Diagnosis.—Melano-sarcoma. Microscopical examination revealed the structure to be that of a sarcoma accompanied by the characteristic deposit of melanin. No information was furnished as to the colour of the hog in question but the portion of skin received was white elsewhere than at the point of the tumour formation.

Many other tumour formations have been examined at the laboratory from time to time but so few representatives of any particular class are at hand that a report thereon would throw but little light on some of the obscure points concerning their occurrence in animals.

Cysticerci (Cystic form of tape worms.) (Measles).

1010. Cysticercus Bovis. (Beef Measle).—This specimen (see Plates V and VI) was forwarded to the laboratory from Winnipeg by Inspector Fisher from a bovine badly infested with these parasites. It is of interest here as this encysted parasite when taken into the intestine of man developes into the Taenia marginata. A careful examination of the plates above referred to will enable a more detailed study of the lesions as they appear to the naked eye. Microscopically the head of the tape worm with its four suckers is very easily demonstrated in the contents of one of these cysts.

1269. Cysticercus cellulosae. (Pork measles). We have a large number of specimens of this parasite but the specimen under consideration was forwarded by Inspector H. H. Ross from Hamilton, Ont. The photographs taken from the specimens received (Plates VII and VIII) show in detail the nature of an invasion with this parasite. Cysts of this parasite taken into the intestine of man develop into the Taenia solium or the most dangerous tapeworm of man. In man this tapeworm sometimes reaches a length of thirty feet.

The cysts contain the head of the parasite with its four suckers and crown of hooklets by means of which it attaches itself to the wall of the intestine, and these are very easily demonstrated by squeezing the cyst between two plates of glass and examining under a low power miscroscope or good magnifying lens.

The extent to which the muscles of the tongue may be involved is well shown in Plate VIII.

Tuberculosis.

Considerable time has been spent in the study of problems presented in connection with the experimental tubercular herd and with other phases of the tuberculosis problem in the lower animals. That in connection with the experimental tubercular herd is being prepared for inclusion in a special report on the subject. Some of the other phases of the tuberculosis problem with which we have dealt during the past year are of interest and one particular feature is worthy of mention at this time, namely, the increasing prevalence of tuberculosis among poultry. As the diagnosis of this disease is only possible where poultry raisers forward material to the laboratory for diagnostic purposes we of course do not learn of many losses of considerable extent. Since the identification of the disease in poultry forwarded to the laboratory from Enderby, B.C., as detailed in my report for 1904 a few cases have been dealt with each subsequent year and the disease has been found to be present not only in British Columbia but also in Alberta, Ontario and Quebec. No attempt has been made to follow up the history of the introduction of the disease among the poultry nor is there any evidence to indicate that one outbreak has been responsible for others. Mr. Gilbert, the poultry manager of the Experimental Farm, informs me that in one instance where the instructions given in a laboratory report were followed the disease was completely eradicated and that in another instance where the owner preferred to run the risk of losing his entire flock that losses have been constant and that the evidence available would indicate that this particular flock had been the source of a number of smaller outbreaks.

That the disease is highly contagious through the medium of the droppings is evidenced by the fact that in every instance the autopsy findings have revealed intestinal ulcerations discharging directly into the intestine and the droppings themselves have contained countless bacilli. From the habits of fowls it is evident that constant reinfection is possible and the autopsy findings would indicate that this does occur, therefore any measures for the suppression of the disease must be drastic and efficiently carried out that all infective material may be destroyed. The destruction of the fowls followed by thorough disinfection of the quarters and the ploughing up of the runs will usually prove effective. New stock should be raised from the egg and care taken to determine that the parent stock from which the eggs come is free from this or other diseases.

Incubating Ovens.

The construction of cheap serviceable incubating devices is a live topic to the enthusiastic pathologist whose desire for advanced knowledge is checked by the excessive cost of apparatus including that required to maintain his cultures at the desired temperature.

Early in my study of bacteriology I found that incubators described by various manufactures were so high in price as to preclude the possibility of immediate possession and it was therefore necessary for me to provide a substitute within my means. Since that time, still keeping in mind my own early difficulties in this connection, I have experimented on various designs with a view of securing a device cheap in construction, but nevertheless, of such delicate adjustment that work requiring absolute control of the temperature may be undertaken with perfect satisfaction.

Such an incubator I have been successful in designing and a number have been in use for some years. Their simplicity is the strongest feature which they possess and they can be adapted for use with coal oil or alcohol lamps, as well as with the ordinary gases used for laboratory purposes. In my experimental work I have found that the water jacketed type of incubating oven possesses some advantages over other forms for certain classes of work, but that this new type of heating device will give results the equal of any that may be obtained by the most expensively constructed oven that it has been my privilege to examine.

The heater of this new type of incubator is constructed of ordinary iron pipe and cast-iron pipe fittings which are obtainable from any steamfitter. The incubator itself is simply a light wooden box with a tightly fitting single or double door. The box itself may be lined with metal and covered with asbestos if desired and should contain, aside from the apertures at the top and bottom for the open pipes of the heater, holes of a suitable size for thermometer and thermostat. The style of thermostat is immaterial but after years of experimenting I have equipped all of the incubators at this laboratory with a themostat originally designed for chicken incubators, actuated by the expansion of a liquid hermetically sealed between thin discs of brass. The expansion of the liquid between these discs lifts a lever when the temperature increases, automatically closing the gas valve supplying the burner. By controlling the gas valve in this manner the difficulty so often encountered with a variable pressure of the gas is obviated. For the ordinary incubating temperature of 37°C (=98·6°F), gasolene or ether is the liquid used. As a liquid always has the same coefficient of expansion after the instrument is once adjusted no alteration is required With other forms of regulators I have found continual adjustment necessary to compensate for the oxidation of the mercury or the molecular cohesion of the solid metal forms. Not only is it possible to utilize this style of thermostat for the controlling of the temperature in an ordinary incubator (three of which are shown in Plate IX) but it is also possible, by changing the liquid contained within the cavity between the metal discs to use them for a higher temperature as well and they are so used at this laboratory (Plate X).

The construction of the smaller incubators is so simple as to need no further description. If larger ovens of the same design are required then a specially constructed casting will be required for the distribution of the pipes used in the heating system. I have used the ordinary black iron pipe in preference to any other metal as it is cheap, will not burn out and is of such a thickness that it radiates a certain amount of heat when the door is opened. The continual stream of air passing through the pipes of this heater assists in the maintaining of a uniform temperature for when the chamber reaches the temperature at which it is regulated the gas is automatically turned down and the circulation of cold air through the heating pipes prevents the overheating of the incubating space.

For larger incubating chambers a different form of heater has been found to give excellent satisfaction as it is not usually possible to have your heating system beneath the chamber to be heated. In the large incubator room at this laboratory which is five by six feet and six and a half feet high, a three inch iron pipe is installed using the long elbows for the corners. Twenty-seven lineal feet of this pipe together with the necessary elbows for the conveyance of the heated air from the burner through the chamber maintains the desired temperature at all seasons of the year. This incubator has been in use for more than two years and a half and has given no trouble whatever.

A hot water installation would have been much more expensive in its first cost and could have given no better satisfaction than I have obtained from this device. With the system in use there is very little danger of overheating while with hot water the water in the pipes and boiler are liable to become overheated when the door of the room is left open during the manipulation of the large cultures and the contained air is consequently over heated when the door is closed.

The controlling device in such a large incubator may be similar to that referred to where ordinary coal or gasolene gas is used, but the size of the opening in the gas valve will naturally have to be of a sufficient size to supply the large burner installed. With acetylene another factor enters which requires a decided change in the method of controlling the temperature. This factor is due to the quality of the gas which renders it impossible to reduce the amount of gas supplied to a heating burner in order to reduce the temperature. As it is necessary to have the burner full on or off, then a device must be used to meet this particular requirement. For this purpose I have successfully used an automatic electric valve in connection with a thermostat for regulating the current. This valve is so wired that when the contact is made and the valve turned the contact is immediately broken thus reducing the amount of current used in its constant manipulation. One of these valves has been in use for very nearly four years and is still rendering satisfactory service. I have found that for continued use it is necessary to use platinum for the contact tips for when other metals are used there may be an oxidation at the point of contact sufficient to interfere with its proper working.

Before making the installation of the heater in the present large incubator which is in constant use at this laboratory I considered the various devices and it appeared to me that each had defects not easily overcome. This installation continues to give satisfactory service and the temperature can be maintained within a fraction of a degree.

So satisfactory have all these incubators proven that I have no hesitation in recommending them to any one searching for a cheap method of satisfactorily maintaining a temperature at any given point.

In the foregoing report I have merely mentioned some of the more important features pertaining to my duties during the past year. It is nevertheless quite apparent to me that there are features of the work requiring a greater amount of attention than has been possible in the past and I trust that with the growth of the laboratory opportunity will be afforded for a consideration of these details.

The absence of Dr. Hadwen on leave since September last has deprived us of his services at a time when a trained assistant was required to supervise many details connected with the work of the laboratory. The research work which he has undertaken with Dr. Nuttall, of Cambridge University, will no doubt prove valuable to us on his return as he is taking up advanced work on the identification of ticks and other parasites concerned in the transmission of animal diseases.

The resignation of Wm. Laidlaw, V.S., at a time when his training had progressed sufficiently to enable him to assist with many details of the laboratory routine renders it necessary for me to assume the routine in addition to the manufacture of the biological products required.

In closing this report I may state that in spite of the unpromising outlook at the present time I believe that the year which we are about to enter will witness a further development of the laboratory and its importance to the work of the Branch so ably administered by you.

I have the honour to be, sir,
Your obedient servant,

CHAS. H. HIGGINS,
Pathologist.

APPENDIX No. 9.

E. A. WATSON, V.S.

REPORT OF THE EXPERIMENTAL (QUARANTINE) STATION, LETHBRIDGE, ALBERTA.

MARCH 31, 1909.

SIR,—I have the honour to submit the following, an outline of the research work in connection with certain diseases under investigation at the Experimental (Quarantine) Station, Lethbridge, Alta., carried out or in progress during the year ending March 31, 1909.

DOURINE (MALADIE DU COIT).

The work on Dourine during the past year includes:—

(1) Further observations upon a number of mares that were pronounced affected with Dourine four to five years ago and in which the disease was diagnosed upon clinical symptoms alone.

(2) The experimental breeding of a number of the above mares that, to all appearances, had recovered from the disease, and observations upon the offspring of such mares that had been bred in the two preceding years in earlier stages of tolerance or apparent recovery; also, upon mares that showed marked symptoms of Dourine during the periods of pregnancy, and of their offspring.

(3) The continuation of several series of experiments commenced at the end of the year 1906 with the primary object of positively determining the suspected parasitic nature of the disease.

(4) Further demonstrations of the *Trypanosoma equiperdum* as the causative agent of Dourine.

(5) The maintenance of this trypanosome parasite in experimental horses and the study, through succeeding generations, of the habits, life history, variations in virulence of the organism, in its natural host, and of certain factors influencing its vitality and resistance under the foregoing and under artificial conditions.

(6) A comparative study of this Canadian variety of Dourine with those occurring in the old world.

(7) Experiments upon laboratory animals in attempts to transmit and maintain the infection and so to carry on the research work more fully and at less cost than when horses alone are utilized.

(8) A study of experimental Dourine in horses; particularly, of the incubation period, the primary symptoms, the intermittent type of fever, and of signs of the disease of possibly pathognomic and diagnostic importance.

(9) (*a*). A review of our present means of diagnosis.

(*b*) Experiments on horses with the object of arousing a latent infection into activity or inducing a reaction by which a satisfactory diagnosis could be arrived at, either on pronounced clinical symptoms or by detection of the parasite.

(10) Experiments with the blood and serum of horses in different stages of the disease and after recovery from it with a view to immunization, prevention and diagnosis.

(11) Experiments on the chemo-therapy of Dourine in naturally and artificially infected horses.

It was recognized that the variety of Dourine with which we are dealing differs considerably from those occurring upon other continents and that it would be necessary to study it separately, from beginning to end, with the modifications and special features that characterize it in this country.

I have been able to repeatedly confirm my earlier observations on the specific trypanosome of this variety of Dourine by isolating the parasite from several different centres of infection, by reproducing the disease in healthy horses by inoculation of the parasite, and by observing the same upon many hundred of occasions in the blood or body fluids of equines naturally and experimentally infected.

The detection and study of the *Trypanosoma equiperdum* in its natural host is attended with the greatest difficulty and only at the expense of a great amount of time and labour. The periods of trypanosome activity in the accessible fluids are usually of rare occurrence, few and far between and of brief duration and even then, more frequently than not, the parasites are scanty in numbers. The preparation and tedious searching of thousands of films has been necessary and carried out and for every positive result there have been experienced many negative ones, but one of the former compensates for almost any number of the latter.

It is the knowledge gained of this blood haunting protozoan flagellate, the methods devised for determining its presence, and the production of experimental Dourine in horses that has made it possible to study the disease from its very commencement, to acquire facts and data of a reliable character and without which the greater part of this work could not have been carried out.

The course of Dourine, in general, in the majority of cases, is marked by alternating paroxysms and intermissions. The paroxysms, when they follow a short incubation period, may, for the first few weeks or months, be of a well marked type. They then become ill defined, appearing with less frequency and regularity, the intervals of intermission lengthening out from a week or two to one of many months' duration. Animals, that at one time have exhibited characteristic symptoms have regained perfect appearances of health. In several cases, however, relapses have occurred after nearly a year of health, while a number of animals have maintained an apparently healthy condition up to the present time,—from two to three years, during which they have been experimentally employed for breeding purposes. A number of healthy offspring have resulted from breeding, with certain precautions, to a healthy stallion, and, in one case, from breeding to a dourined stallion. A recovered mare, bred, and subsequently, at intervals during pregnancy, inoculated with *T. equiperdum* appears to have acquired an immunity and has recently, after a normal term, given birth to an apparently healthy foal. Another mare also appears immune, repeated inoculations of the Dourine parasite failing to produce any evidence of infection.

It is a matter of the greatest importance to be able to reach a decision as to whether an animal has permanently recovered or merely tolerates the disease, for one that is or apparently becomes immune but continues to harbour the parasite must, unless placed under certain restrictions, be considered as a real source of danger. Whether such an animal can transmit a lethal trypanosome or but one that has become greatly reduced in virulence and capable of producing only a mild infection cannot be fully answered at present. My experiments are showing that it is in the early stages of an infection that the parasites are most active and numerous in the tissues and fluids of the genital organs and that, as the disease advances or as the animal becomes indifferent to it, the parasites gradually disappear from these regions, rarely returning to it. Further, that when the parasite is successively transmitted from horse to horse during the early stage of the infections the length of the incubation periods is lessened, the disease tending to increase in severity, but when transmitted during a late stage or when an animal is becoming tolerant of it, the incubation period is greatly prolonged, the disease illdefined and scarcely possible to follow. In reporting on an

outbreak of Dourine in Croatia Professor Kern has given statistics showing that, as time goes on, the danger of an infected stallion transmitting the disease diminishes. —*(Veterinary Journal, Vol. 63, Page 751).*

There are strong indications that recoveries from Dourine are not infrequent, but it is well to remember the remarkable analogy that exists between Dourine and Sleeping Sickness or Human Trypanosomiasis both in the nature of the diseases and the problematical recoveries that may follow them. A number of cases of recovery from sleeping sickness have been reported within the past few years but there are now frequently coming to hand the reports of cases that have relapsed after intervals of from one to several years of perfect health. Recoveries are therefore regarded with the greatest suspicion; indeed, the question is raised in the latest issued Bulletin of the Sleeping Sickness Bureau (Bulletin No. 7) 'of how many can it be said that their recovery is permanent?' and, 'Is there any evidence that a single case of cure in man has taken place?'

The possible duration of a trypanosome infection in man and animals without the betrayal of any definite sign of its presence is, without doubt, an exceedingly long one. The utmost caution must be used in freeing an animal that has been justly suspected or in pronouncing a permanent recovery, for such animals may be carriers of the virus for unknown periods. Our knowledge of the parasite of Dourine is still very incomplete and until more facts can be referred to and a criterion of cure or recovery fully established, it will surely be safest for all practical purposes to consider an animal that survives infection as still a carrier of it, and, in the light of its capability of spreading the disease, when given the opportunity, as but a few degrees less dangerous than the newly infected stallion or mare .

The investigation of Dourine in Canada has now been in progress for several years and it may be thought that results are slow in forthcoming. The above sketch and comments indicate to some slight extent the nature of the disease, the difficulties that are met with in studying it, and the necessity of greatly prolonging periods of careful observation before arriving at conclusions. An intermediate report, to which the foregoing is an introduction, is now in preparation and will be ready to submit to you, I hope, at an early date.

The investigation of the disease known as loco-poisoning continues. I have already submitted a preliminary report on the disease, under date of November 1, 1908. Since then a number of experiments have been carried out, although I have been unable to give the subject the full time and attention that it requires.

The results and theories of the workers investigating loco-poisoning for the United States Bureau of Plant Industry are very interesting to us, particularly the claim that the disease is a form of barium-poisoning and that the loco plants are harmful according to the amount of certain salts of barium they contain.

Up to the present I have not been able to produce the symptoms or condition that characterize the disease in this country by feeding barium salts to horses, nor by feeding certain loco-plants to horses and rabbits. The experiments, however, have not yet been sufficiently numerous to permit of further statements or conclusions.

I have the honour to be, sir,
Your obedient servant,

E. A. WATSON,
In charge of Experimental Station.

To the Veterinary Director General,
Ottawa.

APPENDIX No. 10.

E. A. WATSON, V.S.

THE QUARANTINE STATION,
LETHBRIDGE, ALTA., March 31, 1909.

SIR,—I have the honour to submit herewith a Preliminary Report on the Loco Disease of horses and cattle in the province of Alberta.

It may be thought that a further contribution to the already extensive literature on the subject of loco-poisoning, unless it contains a solution of the problem or at least an hypothesis that is calculated on a basis of facts to lead to such a result, is unnecessary. However, so many different and contradictory opinions exist concerning the cause, nature and spread of the disease, that it seemed to me advisable to describe in detail such facts and points of interest as have been ascertained relative to its occurrence, and the symptoms and pathological conditions observed in affected animals, in this province.

A few references have been made to some of the results of other investigations of importance, and some discursory remarks on loco weeds and the causation of the disease, in the hope that this report may be of some assistance in the further study of the loco-problem.

Drs. G. Hilton and D. Warnock, in September, 1907, selected a number of affected animals in the Porcupine Hills district for removal to the Quarantine Station, Lethbridge. Much difficulty, I am told, was experienced in the collection and removal of these animals, a number becoming unmanageable and were either killed or abandoned, only thirteen reaching their destination. Drs. Hilton and Warnock have already recorded some of their observations on loco disease, and I am much indebted to these gentlemen for the history of the animals sent here and for other valuable information. It is also a pleasure to acknowledge the assistance and hospitality of the stockowners who have supplied the animals for experimental purposes and through whose kindness I was enabled, on a recent visit, to examine a large number of cases. Dr. J. Fletcher, Ottawa, has kindly identified specimens of loco-plants that I had submitted to him.

In the animals sent to this station I did not consider it advisable to attempt much in the way of medicinal treatment but to keep them under constant observation, note the effects of an entire change of range and forage conditions, and gain some accurate knowledge of the course and pathology of the disease. I have also given considerable attention to the possibility of the disease being of an infectious nature, and have made a great number of blood examinations and not a few experimental inoculations, without obtaining any evidence in support of such a view.

The experimental feeding of healthy horses and cattle with the suspected weeds has not been carried out as yet. I have only recently been able to secure small quantities of the loco weeds grown on the disease affected ranges, but several stockowners have promised their assistance in this matter this next spring.

Feeding experiments in healthy range stock, a close study of the "loco-habit" and the conditions giving rise to it, and experimental treatment of affected animals should, I respectfully submit, receive attention, and could more profitably be undertaken in the affected districts where opportunities for such work are practically unlimited, than at this distant station. At the same time it would be of interest and importance to determine here whether the loco weeds that are quite plentiful in these

pastures, when fed to healthy horses and cattle are capable of producing a similar disease to that now occurring in the Porcupine Hills.

I have the honour to be, sir,
Your obedient servant,

E. A. WATSON,
In charge of Quarantine Station.

To the Veterinary Director General.
Ottawa.

LOCO-DISEASE.

There is an abundance of literature* concerning in one way or another loco-disease and loco weeds, but marked absence of agreement in the conclusions arrived at by different investigators. It is sufficient to say that all enquiries conducted with the object of determining the essential cause and the pathogenesis of the disease, and the application of knowledge so gained as a basis on which to devise remedial and preventive measures have, though productive of interesting and valuable hypotheses, more or less failed in their chief endeavour. The suspected weeds have been analysed time and again by experts, but without success in isolating or extracting a specific agent or toxic principle to which the disease could be attributed, with one notable exception detailed below.

A microbe, a parasite, pathogenic moulds or fungi attached to and drugs or chemical poisons contained in the loco weeds, have each been considered as possible causative factors but investigations along such lines to whatever extent carried out have been productive of equally negative results. The exception referred to is the recent work of Dr. A. C. Crawford * who has succeeded in demonstrating the pharmacological activity of certain loco plants in feeding the extractives to rabbits; also, that these extractives contained barium, that rabbits fed barium salts exhibit similar symptoms as when fed the extracts of barium containing plants, and that these symptoms again are analogous to certain of those described in affected stock on the range. Thus, the co-relation of barium-poisoning and loco-disease experimentally produced in rabbits in the laboratory appears to have been demonstrated, but it is well to remember that a comparison of the symptoms occurring in laboratory animals with those chronic conditions that obtain in loco-affected horses and cattle is very difficult and liable to errors. Proof that loco disease in stock on the range is a chronic form of barium-poisoning has not yet been furnished, although it is anticipated from the statement by Dr. C. Dwight Marsh, (U.S. Bureau of Plant Industry Bull. No. 121, p. 37) "that it was clearly proved that Aragallus lamberti would poison horses, sheep and cattle, and that Astragalus mollissimus would poison horses," together with the introductory statement to the laboratory work of Dr. Crawford's that the result of the loco investigation in the field will furnish such evidence, and the publication is awaited with much interest.

Should it be definitely established that the eating of barium-containing forage plants is an important cause of loco-disease, then, new problems and certain lines of work are suggested in dealing with various forms of forage-poisoning in animals, and, very probably in similar diseases in man, such as Pellagra, Lathyrism, etc.

Loco-disease has been known for many years, and by all accounts is responsible for large annual losses in stock in several of the states bordering the slopes of the Rockies from Montana to Mexico. The belief that the disease in these states is associated with the 'loco-habit,' that is, the acquired appetite for certain plants known as

* A very complete citation of literature, and the full details of Dr. Crawford's experiments may be found in U.S. Dept. Agric. Bureau of Plant Industry Bulletin No. 129, August, 1908.

loco or rattle weeds, seems to be well founded, but that the action of a poisonous constituent of these plants on the body tissues is directly the starting point and subsequent manifestation of the disease, is at present an hypothesis that has to be further supported by scientific facts before it can be wholly accepted and applied.

Occurrence of the Disease in Canada.

From time to time in years gone by, locoed animals have been brought into this country from one of the states to the south by speculative purchasers who claimed that an entire change of range conditions would result in recovery for a fair number of the affected animals. Of the natural occurrence of the disease in Canada I have been unable to obtain any reliable information prior to the year 1900. The disease is said to occur to a small extent in the province of Saskatchewan on the range of the southern slopes of the Cypress Hills, and in certain districts bordering the Saskatchewan River. In the province of Alberta it appears to be confined to the Porcupine Hills district.

Dr. D. Warnock, of Pincher Creek, Alta., has kindly furnished me with a map showing the loco-affected district in the province of Alberta, and which he describes as follows:—

"Infected area consists of the following townships, viz:—Townships, 11, 12 and 13, Ranges 28 and 29 west of the 4th Meridian and lying south of Willow Creek. Comprises districts known as New Oxley, Lyndon and Meadow Creek.

Townships 7 (that portion of 7 lying north of Old Man's River) 8, 9 and 10, Ranges 27, 28, 29 and 30, West of 4th Meridian and west of Macleod branch of C. & E. Railway. Comprises districts known as Summerview, Beaver Creek, Tennessee Coulee and Jack O'Neill Coulee.

Townships 8, 9 and 10, Range 1 west of 5th Meridian and north of Old Man's River and east of Livingstone Range of Mountains. Comprises district of Livingstone."

It will thus be seen from the above statement that the loco-affected district includes about 25 Townships and is bounded on the North by Willow Creek, on the south by the Old Man River, on the east by the Macleod branch of the C. & E. Railway, and on the west by the Livingstone Range of mountains.

Most of the ranchers interviewed, living in the district mentioned for the past ten to twenty years state that they never observed a locoed animal prior to the year 1900. A few expressed the opinion that sporadic cases did occur at an earlier period. In the year 1901 the disease appeared in certain herds of stockers that had been imported to the district and in the following year or two a high percentage of their progeny became affected as well as a number of native range cattle. In horses, no information could be gathered that the disease occurred prior to 1903-4, since when, a large number, more particularly the yearlings and two-year-olds have acquired the sickness, and the recent losses reported both in equines and bovines are very great.

The following information has been furnished by stockowners, and will convey some idea of the spread of the disease and the losses sustained:—

(a) Mr. T. M. B. commenced ranching in this district in 1906, and in that year 5%, in 1907 15%-20%, and in 1908 over 30% of his cattle were affected with, and had mostly succumbed to loco-disease.

(b) Mr. T. B. places his loss in cattle at 75-80 head, dating from 1901-1908. His horses were not affected until two years ago, and in eighteen months he lost 17 yearlings or two-year-olds, comprising nearly all of his young animals.

(c) Mr. H. had been running a small herd of cattle for eleven years and first experienced the disease in 1907. In eighteen months he has lost 36 head, practically all of his one and two-year-olds, and some of this season's calves are already showing symptoms of the malady.

(*d*) Mr. A. R. stated that in three years 1901-1904 he lost from 60%-75% of his cattle, and then disposed of the remainder and his ranch.

(*e*) Mr. W. H. C. stated that in the winter of 1906-1907 he weaned his foals, and hand-fed these and his yearlings with a generous diet of green oats and hay, and that the animals on being turned out to pasture in the spring of 1907 were in excellent health and condition, but a few weeks later developed symptoms of loco-poisoning. A number succumbed in the second and third month of the disease, the total loss for twelve months being 36, all yearlings or two-year-olds. The foals born in this same year remained in good health until the summer following (1908) when five of the fifteen were found affected, three succumbing. In 1907 five calves at six months of age were showing characteristic symptoms, and died within the twelfth to the eighteenth month of the disease, and a number of the calves of the same year which then escaped the sickness have now acquired it as yearlings.

A number of similar experiences could be cited, but the above will serve as average samples.

The percentage of animals affected in certain herds is reported by stockowners as higher in 1907 than in 1906, and still higher in 1908 than in 1907. The total losses in 1908 may not be greater than in the preceding years, as a large number of young stock have been sold or slaughtered, no fresh stock imported, and the number of cattle now raised on this range not nearly as great as formerly.

One rancher who is experiencing heavy losses is raising a large number of pigs, which subsist almost entirely on the carcasses of his locoed animals, and appear to thrive well on the diet.

Concerning Loco-Weeds and the causation of Loco Disease. Notes and discussion.

The weeds suspected of producing the disease are found usually to belong to one or the other of the botanical groups *Astragalus* and *Aragallus*. In past years a large variety of leguminous plants growing on the ranges of Alberta and Saskatchewan have been pointed out to me as loco weeds, by stockmen from Colorado, Wyoming, or Montana; their descriptions of the disease I found as variegated as the plants to which they attributed it.

More or less empiric views regarding the relation of the "loco-habit" to loco disease may be summed up, chiefly, as follows:—

(A) That the *loco-habit* is acquired (a) through the over-stocking of the range, and, from the scarcity of normal forage, animals being forced to eat the loco weeds, (b) by one animal imitating another, (c) by hereditary predisposition.

(B) That the habit once acquired, persists, and that affected animals if only temporarily removed from the range, will revert to it, and will pick out these weeds whenever possible and eat them in preference to grass or proper fodder.

(C) That the loco-eating habit results in what is known as loco-disease, or, at least, in the production of those symptoms associated with the central nervous system, and malnutrition, leading to death.

(D) That the loco plants are always present and in abundance where ever the disease exists.

(E) That the loco plants are always absent from those stock ranges where the disease is unknown.

It is perhaps scarcely necessary to include this last, and it may be disposed of at once as a totally wrong conclusion for numerous observers have reported the prevalence of loco weeds in districts where the disease is quite unknown. In a bulletin entitled "Weeds of the Farm and Ranche" [*1] it is stated that two species of loco weeds *Oxytropis lamberti* and *O. splendens*, are abundant from Manitoba to the Rock-

[*1] Bulletin No. 7. Govt. of the Province of Saskatchewan, Dept. of Agriculture.

ies. Again, in another Bulletin, * the "White Loco" is distributed over nearly the whole plains region of the United States from Alberta and Assiniboia south to Mexico, and from Minnesota and Kansas westward to the Rockies." I might add that I am personally familiar with several stock ranges in Alberta and Saskatchewan where the loco weeds are very prevalent, and where the forage plants and grasses appear less prolific than on the ranges in the Porcupine Hills, but on the former so far as I am aware the disease is still unobserved. The foregoing is mentioned as it is still frequently asserted that the plants are only found in the diseased areas. This view is sometimes modified in that it is not the prevalence but the abundance of loco weeds on close eaten stock ranges that causes the sickness. A more probable explanation, I think, lies in the fact recently brought forward by Dr. Crawford that "Loco plants grown on certain soils are inactive pharmacologically and contain no barium."

From all accounts the Porcupine Hills district had proved for many years to be a most profitable range for the raising of cattle and horses, but since 1901 loco disease has spread to such an extent within this particular district, and there is good reason to believe, is including a wider area each year, that the industry has become much curtailed. Certainly, the scarcity of grass and forage as a predisposing cause of the loco-habit cannot be advanced as a reason for the large number of young animals that have become affected during the summer and autumn of 1908. On my recent trip of September of this year I found the range, to all appearances, in excellent condition. There was an abundance of grass, and over large areas where affected animals were seen grazing it would have been possible to cut from four to six or eight tons of hay per day, with a single mowing machine. Notwithstanding, several stockowners stated that the number of their animals that are affected with, or had succumbed to, loco disease, during this past season, is twice as great as in the preceding year 1907. Within the space of two years from one-third to two-thirds of the total number of animals in certain herds have become diseased.

It is sometimes remarked that heavy losses are occurring on a certain range or pasture while adjoining ranges, separated from the former only by a wire fence, remain free from the disease. The following is a case in point:—Mr. J. C. has 90 head of cattle and 26 horses, his range and pastures are in close proximity to those of Mr. W. H. C., the former has entirely escaped the malady while the losses upon the latter within two years amounted to 36 horses and 8 cattle. A brief examination of these ranges did not reveal any material difference in the forage conditions, and the loco plants appeared to be as abundant upon one as the other. Mr. J. C. stated that he kept his animals within fenced pastures in the winter and herded them on the range in the summer, driving off any locoed beast that appeared in their vicinity. However, certain ranchers that were congratulating themselves on the freedom of their animals from disease while those of their neighbours suffered severely, have recently discovered that their immunity was of a very temporary nature.

The species of plant which is most concerned in causing loco disease in Montana is said to be the *Aragallus spicatus,* closely related to *Aragallus lamberti* *1 A similar species of plant *2 is generally pointed out or referred to as the cause of the disease in the Porcupine Hills. *(Astragalus mollissimus* is also prevalent in the same localities.) This plant, as well as some others belonging to the same botanical group, grows abundantly on the hillsides in the Quarantine Station pastures, near Lethbridge, and on ranges in this vicinity. Seven horses and six cattle, all showing symptoms of loco-disease, were collected in the Porcupine Hills district and sent to this Station a year ago; in the horses I have been unable to detect an appetite for

* Bulletin No. 45. Montana Agricultural Experiment Station.

*1 Bulletin No. 26. U. S. Dept. of Agric. Div. Bot. "The Stock-poisoning Plants of Montana," Chestnut and Wilcox.

*2 Identified by Dr. J. Fletcher, Botanist Cent. Expt. Farm, Ottawa, as Oxytropis Lamberti.

any of these loco-weeds, rarely they were seen to eat one, or a portion of one, included with the grass apparently by accident. The cattle have at times been observed to eat plentifully of a certain weed, one severely affected steer in particular seeking this out, but it did not belong to either the Aragallus or Astragalus varieties. All the horses and two of the cattle have succumbed to the disease.

While the symptoms occurring in equines and bovines offer some points of difference, they are, on the whole, very similar, and in all probability are produced by the same cause, though a few stockowners take an opposite view. The chief reason for the latter, apparently is the fact that up to the present some owners have experienced the disease only in cattle while running horses under similar conditions. The loco disease in Montana is peculiar in that sheep and horses are the chief sufferers, rarely cattle;[1] it is said that a number of ranchers in that State because of the losses from loco, have sold their sheep and restocked with cattle, as the latter are so little affected. [2] In Alberta cattle were the first to become locoed, subsequently horses; it is not known whether sheep are susceptible as these animals are not grazed within the affected area. Concerning loco weeds, it may be mentioned that an "old-timer", a trader with the Indians in former days, stated to me that twenty years ago, in Alberta, he had often noted the Indians removing loco weeds when picketing out their horses. I interviewed several old Indians on this point, showing them samples of the weed *(Aragallus lamberti),* which they recognized as one of their favourite medicine plants, explaining that when they gathered it, is was not to prevent their horses from eating it, but for their own uses, drinking the infusion as a remedy for sore throat, lung troubles, tooth-ache, etc.

In dealing with the loco problem in Alberta it should be remembered that the number of animals affected is increasing each year, and that the affected area, though confined to a comparatively small district of the western stock ranges, is gradually extending its limits. It is scarcely possible that such a large number of young animals are becoming locoed merely from acquiring the habit by the imitation of those affected by it. Neither can predisposing causes be traced to heredity, for, with few exceptions, the dams have remained in health while their offspring frequently for several successive years have suffered and died from the disease. And besides, locoed animals rarely live long enough to bear offspring, or, if the dam becomes affected after conception abortion is said to be the usual event to follow.

"Loco-disease", in my experience, includes a plurality of pathological conditions emanating from a plurality of causes and complicated by one or more parasitical or infective diseases, the latter often in severe form; the investigation has not proceeded far enough to determine with certainty which are the original or exciting causes and which the sequelae. The symptoms of loco disease indicate serious errors in metabolism, the predisposition to which, it seems to me, probably arises not from the lack of quantity of forage but from the lack of certain inorganic constituents in that forage, especially required in the metabolic processes concerned in the building up of the tissues in young animals, the physiological necessity and craving for these absent elements resulting in their substitution by others of an harmful nature contained in the loco plants or alkaline deposits, hence the depraved appetite, loco-disease and parasitical infections.

The symptoms in loco disease will bear a comparison with those occurring in Cretinism and Myxoedema in man; errors in the internal secretion of special glands such as the thyroids and the pituitary bodies may account for certain of the nervous phenomena and the peculiar condition of the head in locoed animals. In the few cases in which I have examined these special glands the thyroids were found atrophied, and in one case the pituitary body much enlarged.

[1] "The Stock-poisoning Plants of Montana", V. K. Chestnut and E. V. Wilcox.
[2] "The Loco and some other poisonous plants of Montana," J. W. Blankinship.

The foregoing may appear to be an unnecessary multiplication of possible causes and relations, but I believe there to be a number of factors at work in the production of this malady and that a remedy, if found, will be applied not only as an antidote to barium or some poison in the loco weeds but as a restorative of normal metabolism and internal secretions.

SYMPTOMS.

The following deals only with the symptoms occurring in horses and cattle in Alberta, and is the result of the observation of the disease in a large number of animals in the affected district, the Porcupine Hills, but especially in thirteen animals that were collected in this district and sent to the Quarantine Station, Lethbridge.

1. In *Equines*. Young animals from six to eighteen months of age are the most susceptible, and in these a rough, staring coat, in yearlings the non-shedding of the winter's coat, poor appetite, and general unthrifty appearance may either precede or follow cerebral and neuromuscular symptons. It is usually by the symptoms that are associated with the central nervous system that the disease is first recognized by stockowners. Restless, wandering habits, with sleepiness and some depression, alternating perhaps with short periods of excitement or mania, may be the first signs noted, concurrently with disturbances in nutrition and alimentation. In this stage animals are inclined to separate from the herd, which they can be made to rejoin, or driven in a desired direction, only with much difficulty or not at all. Young colts, well halter-broken and gentle, under the influence of the disease become nervous and excitable. They may for a time submit to having the halter placed about the head but stubbornly refuse to be led, tension of the rope causing the animal to spring backwards, or rear up and fall over, and before long they show a terror of the rope and become quite unmanageable. Later, however, they become quite indifferent to light touches of the whip, knocks, pin-pricks, etc.; this is the stage of depression and stupor, in which even unbroken horses may sometimes be handled and pushed about at will, though it is well to be on ones guard for at any moment, without warning, the subject may suddenly leap into the air, striking against a rafter, the side of a building, fence post, or anything that happens to be nearby. Mental derangement and inco-ordinate muscular action form the most constant and characteristic symptoms of the disease. The peculiar gait is at once remarked upon, locomotion being performed slowly and with deliberation, accompanied by overflexion and extension of the limbs. The head is carried low, the arm lifted high, so that the knee and chin are nearly horizontal and in close proximity. The animal appears to be walking over invisible obstacles, and if driven fast, will frequently stumble and fall, though the ground be perfectly level. When the condition is very severe it is almost impossible to force him out of a slow walk, if urged he becomes excited, moving the limbs up and down upon the said spot, 'marking-time' as it were, or moving forward only a few inches at a step.

Visual errors are common. The loss of the sense of direction is well-marked. When it is attempted to drive an animal in a particular direction he will travel in semi-circles, and run into wire fences or gates. I have seen a locoed steer walk over a cutbank and fall a distance of fifteen feet into the creek below. An animal is sometimes unable to locate a dish of oats or salt placed before him, the attempts being often ludicrous. A glassy, staring expression of the eye is very frequently noticeable, not a truly amaurotic condition as the eye remains sensitive to light, but probably a result of the defective action of the ciliary muscle and consequent loss of power of accommodation and focus, and distortion of the image, rather than from paralysis of the optic nerve and retina. In the later stages changes in the anterior chamber and cornea may be noted, having the appearance of a thin bluish-grey film, translucent rather than opaque.

Lachrymation is often profuse and may continue for weeks or months in remissions. The upper and lower eyelids become swollen, especially the lower which are sometimes everted, and, fragments of hay, &c., entering, give rise to a severe conjunctivitis, and purulent discharge.

Trophic and secretory disturbances, probably dependent upon nervous influence, are an important feature of the disease. Glandular activity is at first increased, later diminished. Different portions of the body are unequally developed. The head is relatively large, the face is devoid of expression, and has a puffed appearance; especially the eye-lids, cheeks, and muzzle are swollen, the swellings being firm and hard (solid œdema) not pitting on pressure. The powers of prehension and deglutition are considerably interfered with, and, in advanced cases, the mouth may constantly be found packed with food, and a wisp of hay left protruding between the lips. If the mouth be examined there will be found more or less evidence of stomatitis in a catarrhal aphthous, or an ulcerous form. The muco-cutaneous margin of the lower lip is rarely free from erosions, and these may be quite extensive or penetrating. Constipation is the rule, sometimes alternating with diarrhœa, retention of urine is occasional, but rare. The disturbances of the digestive system are much complicated by infestations of the alimentary tract with animal parasites. Cutaneous symptoms are chiefly confined to a vesicular, discrete, skin eruption, the hairs in spots becoming matted together with an amber-coloured sticky material. Anasarca and cachective dropsy are not at all uncommon. Abscesses, and swellings along the lower surface of the abdomen may also be observed, probably arising from an irregular form of strangles, which is a very frequent complication in young equines.

II. *In Bovines.* The symptoms, course, duration, and prognosis are, on the whole, very similar in equines and bovines. Young animals, again, as in the former, particularly calves and yearlings, are the most frequent subjects. Lachrymation, nasal mucous discharge, salivation, and stomatitis are prominent features and more constant and severe in cattle than in horses. Fissures, erosions, and ulcerous patches are commonly found in the oral mucous membrane, usually on the inside borders of the lips, and on the gums. The teeth are often irregular, defectively developed, loosened and blackened, the temporary teeth not shed at the proper time. The jaws may be swollen, and the facial expression suggestive of that of a bull-dog, to borrow a simile of Dr. Warnock's. Tremors of the muscles of the head and neck, the head nodding more or less continuously either vertically or horizontally, are characteristic signs by which the disease is often recognized in range cattle, these symptoms being more accentuated when the animal is grazing, ruminating, or attempting to perform any purposeful act, than when at rest. Rigidity is common in the muscles of the head, neck and trunk; the back is arched, the neck twisted, and the jaws remain open or clenched in advanced cases, and then, as if endeavouring to counteract the cramp and rigidity the head and neck are fully extended, the act being prolonged for the space of several minutes, and always accompanied by severe muscular tremors.

For long periods, or persisting throughout the course of the disease, large joint swellings may be noted, involving the carpus, tarsus, and digits. These swellings are firm and slightly elastic to the touch, and on puncture are found to contain a viscid or mucoid, blood tinged fluid. Cutaneous desquamation is continuous and abundant, and the hide, as in most debilitated range animals, is infested with lice.

Duration and Course in equines and bovines.—In animals remaining on the range where the disease was acquired the course is a slow, chronic, steadily progressive one. Not one of the stockowners interviewed could relate in their experience a single case of acute intoxication from loco-poisoning, on the contrary, all agreed that the sickness comes on in a slow and undecided manner, sooner or later manifesting itself in a profound disturbance of the nervous system. Locoed animals, however, are very prone to intercurrent infections and parasitical invasions, and the disease becomes complicated

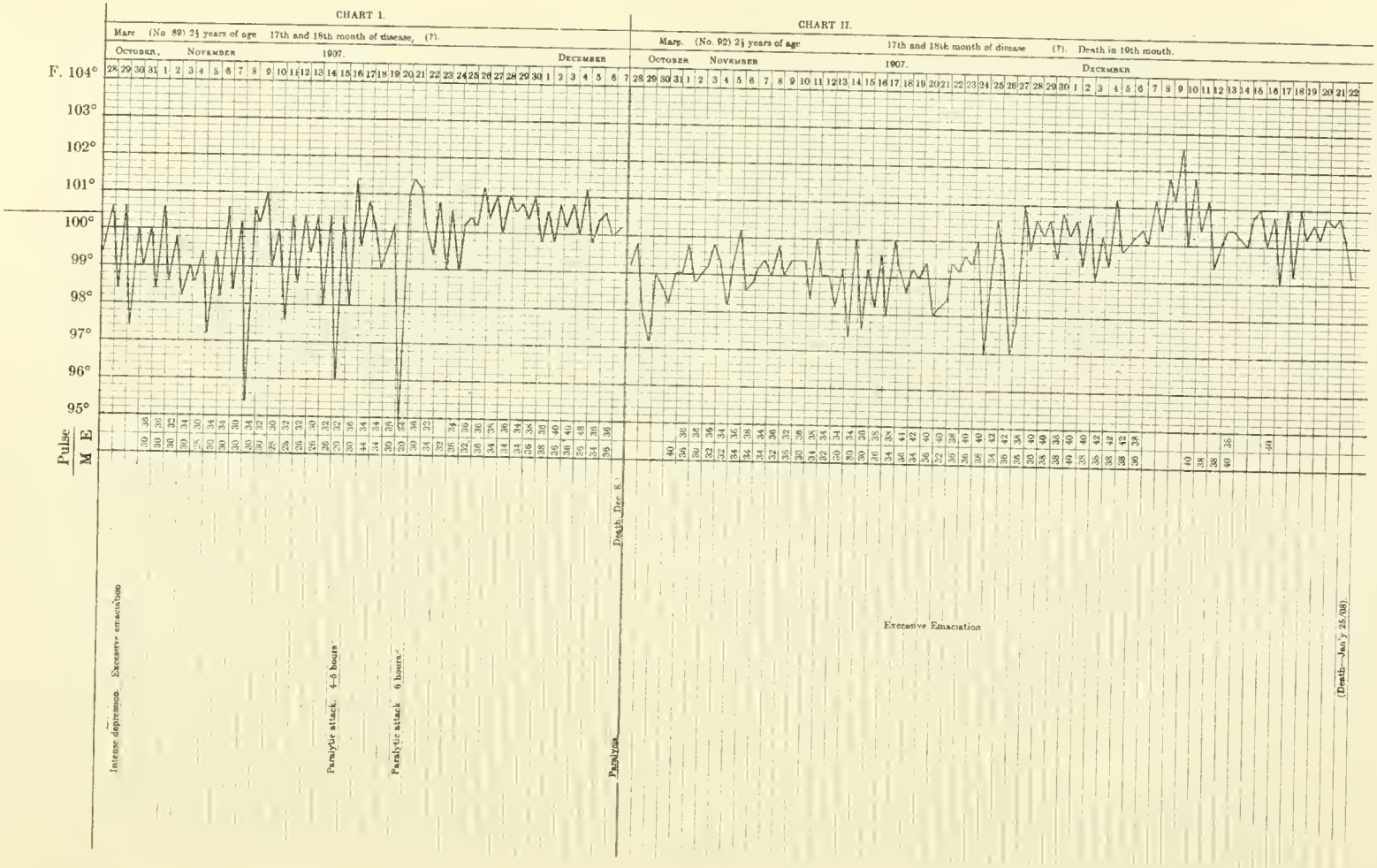


CHART I.
Mary (No 89) 2½ years of age 17th and 18th month of disease, (?).
CHART II.
Mary. (No. 92) 2½ years of age 17th and 18th month of disease (?). Death in 19th month.
October November 1907. December
F. 104° 103° 102° 101° 100° 99° 98° 97° 96° 95°
Pulse
M E
Intense depression. Excessive emaciation
Paralytic attack. 4–5 hours
Paralytic attack 6 hours
Death Dec 8.
Paralysis
Excessive Emaciation
(Death—Jan'y 26/08).

Loco Disease (Appendix No. 10)

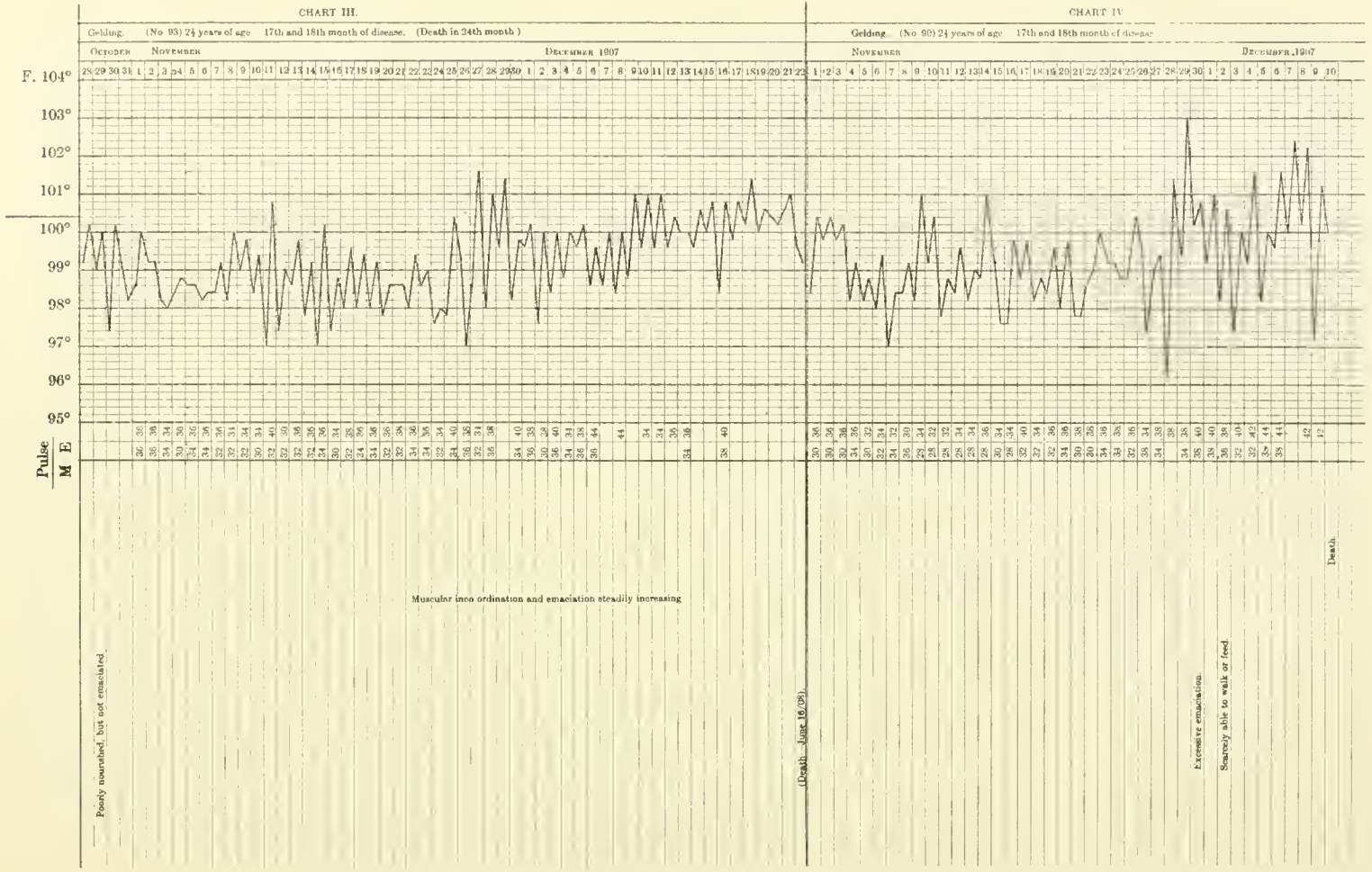


CHART III.
Gelding. (No 93) 2½ years of age 17th and 18th month of disease. (Death in 24th month)
October
November
December 1907
CHART IV
Gelding (No 93) 2½ years of age 17th and 18th month of disease
November
December, 1907
F. 104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
Pulse
M
E
Poorly nourished, but not emaciated
Muscular inco ordination and emaciation steadily increasing
(Death June 16/08)
Excessive emaciation
Scarcely able to walk or feed
Death

CHART V

Heifer. (No. 88) 3 years of age. 6th and 7th month of disease (?). Death in 9th month

October November 1907 December

28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

F. 104° 103° 102° 101° 100° 99° 98° 97° 96° 95°

Muscular tremors and progressive emaciation.

(Death Jan. 30/08).

CHART VI

Heifer. (No 87) 3½ years of age Duration of disease 2½–3 years

October November 1907

28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Excessive emaciation; partial paralysis of jaws.

Severe muscular tremors.

Death.

by disorders of the digestive system due to animal parasites, circulatory disturbances due to verminous aneurisms, muscular psorospermosis (sarcosporidiosis), distemper, etc. In the final months there is extreme emaciation, the utmost melancholia and stupor, and recurring attacks of paralysis. The duration of the malady is from six months to two years, or even longer. Certain stockowners stated that about 70% of their affected animals died within the first year of the disease, 20% of which succumbed within the first six months. Those living from two to three years have usually been removed from the range for certain periods, during which the symptoms have fluctuated or abated, but always reappearing in severe form shortly after returning the animals to their native pastures.

Termination and Mortality.—Recovery is a very rare event, and death the usual termination, occurring during one of the prolonged attacks of paralysis, or from slow starvation, but frequently from a terminal infection such as Purpura haemorrhagica, broncho-pneumonia, or peritonitis resulting from perforation of an intestinal ulcer. From statements already given it will be seen that the mortality is very heavy.

Pathology.—The bodies of those animals succumbing to loco disease are very emaciated. The lesions met with at autopsies are neither constant nor characteristic, and vary greatly according to the duration of the sickness, the complications, and the terminal infection. There is a sero-gelatinous infiltration of the subcutaneous and intermuscular tissues, and swellings of this nature are commonly found in the soft structures of the head, especially the eye-lids, cheeks, and muzzle.

Mucous Membranes.—The conjunctival are swollen, translucent, pink in colour, rarely petechial. The nasal is infiltrated, or congested, and in cases with purpuric complications intensely petechial and haemorrhagic. The oral may present erosions or ulcerous patches.

Digestive organs.—The literature on the pathological conditions in locoed animals contains many allusions to ulceration of the walls of the stomach and intestinal tract, and these lesions are generally regarded as due to the exciting cause and not as secondary conditions arising from the presence of animal parasites. In six autopsies held on locoed equines I found ulcers, nodules, verminous tumors, and areas of chronic inflammation, these lesions being in apparent proportion to the degree of parasitical infestation. In one case where only a few larvae of *gastrophilus equi* were found in the stomach, and a few *Sclerostoma* in the caecum and colon, three ulcers were observed in the mucous coat of the latter, none elsewhere. In a second case in which the stomach and duodenum were infested with thousands of larvae of Gastrophilus, the colon and caecum with innumerable sclerostomes encysted in every portion of the wall of the bowel, attached to the mucous membrane, and free in the very dry impacted contents, there was seen extensive ulceration throughout the alimentary tract, ulcers in all stages of development, many on the verge of perforation and one actually perforating the small intestine with an opening the size of a lead pencil. In a third case in which the presence of parasites and the degree of ulceration was similar to the preceding, and in addition, soft sub-mucous tumors and nodules in the stomach wall containing *Spiroptera*, there was an abcess in the spleen connecting with an ulcer perforating the stomach wall. The alimentary canal from the stomach to the rectum of two locoed heifers, proved free from ulcers or parasites visible to the naked eye. The peritoneal cavity contains an abundance of serous fluid; and, in most cases fibrinous filaments or tufts were adherent to the surfaces of the liver and spleen, and serous coverings of the bowels.

The Liver.—The liver is not enlarged but appears softer and browner in color than normal. Microscopical examinations of livers have not revealed an interstitial hepatitis, the characteristic condition of Pictou cattle disease. There was in all

livers an excessive deposit of granular pigment matter, greenish-black or brown in colour, the cells loaded with the pigment or disintegrating, the nuclei staining very feebly.

The Spleen is not enlarged.

The Heart and Blood Vessels.—From 100-600 c.c. of fluid may be found in the pericadial sac, with more or less evidence of a chronic fibrinous pericarditis and subepicardial gelatinous infiltration. In one case the heart of a small mare weighed nine pounds, in the other animals the organ was not enlarged though sometimes softened. In cattle especially the myocardium is infested with *sarcosporidia,* these parasites also appearing in the endocardium as multitudinous white specks.

At every autopsy on locoed equines verminous aneurisms were found, *Strongylus armatus, Sclerostoma equinum.* In one case only one aneurism the size of a walnut was seen, but in the others the aneurisms were of a most formidable type, and present in numbers of six to fifteen. In two cases a mass of atheromatous vessels two to three times the size of a man's fist was met with, the aneurisms extending along the colic artery as far as the pelvic flexure. Some of the arterial dilations contained thrombi one inch in thickness and two to four inches in length. The arteries involved were, the great mesenteric in six, the coeliac trunk in three, the colic in two, the posterior aorta and renals in two, and probably the hepatic, splenic, and pancreatic in two cases.

The Respiratory Organs.—Pathological changes may be marked or absent. In one bovine the air passages were choked with a clear mucous, there was a quantity of pleuritic effusion, and serous infiltration of the lung tissues. In another, the air passages were choked with a semi-purulent fluid, and the lungs in a stage of chronic suppurative inflammation. In an equine the lungs were intensely congested; in another, mottled and haemorrhagic, and at four autopsies not found visibly altered.

The Musculature.—The flesh is poor in blood and has a brownish or greyish tinge, more pronounced in cattle than in horses. Minute white granules may be seen on cross-section of a muscle if carefully searched for, or thin white elongated coils and spirals on longitudinal section; these are sarcosporidian cysts, often present in vast numbers but not always possible to detect with the unaided eye. They may be found in the muscles of the head, neck, and extremities, but especially abundant in these of the tongue, gums, œsophagus, and diaphragm, and in the myocardium. In very chronic, severe cases of loco-disease the whole of the muscular system was found to be completely overrun by these parasites. This phase of the disease has been separately dealt with in a report already submittted by me, entitled "Sarcosporidiosis".

Osseous changes.—These, when present, vary considerably in character and extent. The shafts of the long bones and plates of the flat bones may be greatly thinned. The swollen appearance of the face when not due to œdema or gelatinous swelling, is caused principally by enlargement of the alveolar cavities of the superior maxilla. The alveoli are distended upwards and outwards, causing flattening of the supraorbital foramen and pressure on the superior maxillary nerve where it emerges from this opening. The bony plates that form these enlargements may become so exceedingly thin that they may, in the dried skull, be easily broken through by pressure of the finger. In other cases however, the skeletal structure may be rather thickened or softened, or is found apparently unaltered.

Joint Lesions.—There is more or less articular inflammation. The capsule and synovial membrane are œdematous and swollen. The cartilage is softened and shows a pinkish discolouration. Large serous swellings of the joints are more often found in cattle than in horses.

Cerebro-Spinal Lesions.—The cerebro-spinal fluid is yellowed and increased in quantity, and on microscopical examination exhibits a mononuclear leucocytosis. The fluid in the spinal canal is of a semi-gelatinous nature. Sero-sanguineous effusions between and beneath the coverings of the brain are usually to be seen. The grey matter is softened and has a pinkish discolouration, and the contrast between the grey and the white matters is not as sharp and clear as is the case in normal brain substance. In one case hæmorrhages beneath the pia, gelatinous œdema of the choroid plexus, and an enlarged pituitary body were noted. In another, that of a heifer, the brain presented a blackened surface with metallic lustre, the condition being due to a remarkable deposition of granular pigment distributed in and beneath the inner covering over the whole of the brain, most excessive over the anterior lobes of the cerebrum. On section the sulci were very deeply pencilled owing to the presence of the pigment granules.

BLOOD EXAMINATIONS.

It is stated by some authors that the fundamental character of loco disease is a progressive anæmia. It would seem that the statement is based chiefly upon the blanched appearance of the mucous membranes that may be observed during life, and the pallor of the musculature and viscera at autopsies. In the literature on the subject I have been unable to refer to actual blood-counts and examinations, and in the few examinations made by me the expected condition was not revealed to any marked extent. Pallor of the tissues, it may be remembered, is not always a sign of a true anæmia and may be occasioned, as in all probability it is in loco disease, by cardiac insufficiency and similar causes, and not from actual loss or poverty of blood. In this disorder the total volume of blood, very difficult to estimate, does appear reduced, but the characteristic changes in anæmia, the deficiencies in quality and quantity of red cells per cubic millimetre are but very slightly apparent. In my examinations of the blood of locoed horses the count of the red cells gave from six to seven millions per cubic millimetre, and fifteeen to twenty-two thousand white cells or leucocytes, (seven and a half millions of red cells and ten thousand white cells in healthy horses.) The hæmoglobin scale in locoed cattle and horses registered at between seventy and eighty. Several hundreds of stained blood smears were examined, the variations in size and shape differed, but not greatly, from those in normal blood, nucleated and stippled red cells were never met with. The differential leucocytic count denoted a predominance of the lymphocytes and mononuclear cells, except in the blood taken in the end-stages of the disease which then showed a marked polynuclear leucocytosis. The relative percentages may be seen in the table that follows:—

AVERAGE, RELATIVE PERCENTAGES.

—	Locoed Cattle.	Healthy Cattle.	Locoed Horses.	Healthy Horses.
Polymorphonuclear neutrophiles	10·7	20·5	38·0	54·2
Eosinophiles	7·0	11·5	6·0	5·9
Mast cells				1·5
Lymphocytes, large and small	62·2	55·0	42·5	30·7
Large mononuclear	17·8	10·0	11·0	5·1
Transitional	2·3	3·0	2·5	2·6
	100·0	100·0	100·0	100·0

The microscopical examination of the blood for the detection of some species of haematozoa has been carried out carefully and systematically, from day to day for periods of five to thirty days in six cases, and a single examination made in twenty-five cases. Also, the fluid in oedematous swellings, the extra-vascular fluids found in the large serous cavities of the body, and the cellular elements of the internal organs including the brain and spinal cord have been examined, and have failed to reveal the presence of a parasite or micro-organism as the chief exciting cause of the disease. The sarcosporidia were the only parasites detected that could bear a possible important relation to the symptoms observed in affected animals.

A fairly large number of inoculations (see Experimental Inoculations) of the blood and fluid of affected animals have been carried out in different species of healthy animals, without success in obtaining any positive results. These experiments do not conclusively prove that the disease is of a non-infectious character, but tend to show that it cannot be transmitted by direct inoculation of blood.

Diagnosis can be established in the majority of cases without much difficulty on cerebral symptoms, errors in judgment and vision, or, in the later stages, from the condition of dejection, misery, stupor, and malnutrition. The very chronic nature of loco disease will exclude those other more or less acute conditions arising from poisoning by water hemlock, larkspur, etc. In young equines the consequences of irregular and malignant forms of Strangles must be remembered, for these may simulate to a great extent some of the conditions found in loco disease, and probably are frequently confounded with them; Strangles, moreover, happens to be very prevalent and severe in the loco-affected district of the Porcupine Hills.

The term 'loco disease,' as already pointed out, is an embracive one, and may not rarely include those conditions known as Osteomalacia and Osteoporosis, and perhaps rightly so, for each of these maladies may be said to be one of locality, and each one in several important respects bears a close analogy to the other, and further, in the absence of positive knowledge and proof of the etiological factors concerned, a 'dietetic origin' has been given each one of them. However, there are certain phases in these diseases that are somewhat contradictory to the theory of the 'dietetic origin,' upon which much disfavour has been cast by several eminent investigators in its relation to equine osteoporosis, the contagious nature of which they appear to be convinced. Certainly, the 'big-head' is a valuable diagnostic sign in loco disease although, as revealed at post-mortem, the appearance is not always due to enlargement of the bones of the skull, or but partly and partly to a solid oedema.

Lastly, as Dourine (Maladie du coit) exists in Alberta in districts not far removed from or within the loco affected area, some difficulty may be experienced in differentiating between the diseases in equines. Certain of the ocular symptoms, the loss of equilibrium, cachexia, and emaciation are common to either disease. In entire horses swelling of the penile sheath, in mares a vaginal discharge, the vulva patent, the mucous membrane swollen and infiltrated, are conditions that may be encountered in locoed animals. In Dourine the inco-ordination is chiefly restricted to the hind quarters and extremities, which are depressed, drag, and knuckle over at the fetlocks, while in loco disease the peculiarity of the gait, consisting of the high stepping action and over-flexion but without knuckling, is principally noted in the front limbs, further, the muscles, joints, limbs, and back are more or less rigid, whereas in Dourine they are relaxed.

REMEDIAL AND PREVENTIVE MEASURES.

Very little can be advised in the way of medicinal treatment. If barium poisoning proves to be the cause of loco-weed disease, then as stated by the author of that theory, Dr. Crawford, the administration of sulphates, especially magnesium sulphate, is indicated. Chemical agents, however, could scarcely be of a permanent value unless

the exciting cause has been determined and removed, treatment commenced in an early stage of the malady and continued and varied according to symptomatic requirements.

But if the spread of the disease among healthy animals on a range where the grass and fodder conditions appear excellent, can be accounted for by the loco-habit largely acquired by imitation, it is obvious that affected animals should at once be removed from the healthy to a range or pasture free from the obnoxious weeds. Healthy animals on the range could be placed in charge of a herder and kept separate from locoed animals. Instances are reported where affected cattle by early removal to a range free from loco plants, or taken in and hand-fed, have so far recovered as to be profitably slaughtered, though such animals are always stunted and undersized.

It may here be noted that the thirteen animals, seven equine and six bovine, collected in the Porcupine Hills district and sent to the Quarantine Station near Lethbridge, have not done well. All of these animals were sheltered, fed good prairie hay, four of the horses in addition receiving bran and oats. Two of the horses were given tonic and alterative treatment with arsenic, sodium bicarb., magnesium sulph., and sulphur. Notwithstanding, in the seven horses and two of the six cattle the disease progressed apparently unhindered, and terminated in death. Three of the cattle appear to be making a slow recovery.

THIRTEEN CASES OF LOCO-DISEASE UNDER OBSERVATION AT THE QUARANTINE STATION, LETHBRIDGE, ALTA.

CHIEF POINTS OF INTEREST.

CASE I.—Heifer, (No. 87.) aged 3½ years, said to have shown symptoms when a yearling, moderating in the winter months under good feeding and stabling, and recurring in the spring when turned out to pasture. Oct. 27, '07. Very poor body nutrition. Rough and staring coat. Cutaneous desquamation. Hair matted with branny scales and a glue-like material. Back arched, jaws rigid, and tremors of muscles of head and neck. Prehension and mastication very imperfect. Great depression. The heifer was in an advanced stage of the disease, was stabled and fed hay, bran and oats, but ate little and could scarcely be aroused from the intense stupor. Nov. 14. '07. Death. Duration of the disease, 2½-3 years.

Autopsy.—Serogelatinous infiltration of subcutis, intermuscular and connective tissues. An excessive deposit of blackish, granular pigment in the coverings and on the surface of the brain. Musculature infested with sarcosporidia. Broncho-pneumonia as a terminal infection.

CASE II.—Heifer, (No. 88.), aged 3 years. Symptoms not quite as severe as but approaching those in Case I; and also, lachrymation and a watery nasal discharge. The disease advanced without remission and for a week before death the animal was in the extremity of helplessness. Jan. 30, '08. Death. Duration of disease, 9 months, possibly 1 year and 9 months.

Autopsy.—Peri and epicarditis, fibrinous. Sero-fibrinous exudates in the larger body cavities. The entire musculature overrun with sarcosporidia. Chronic, suppurative inflammation of the lungs.

CASE III.—Steer, (No. 83), aged 3 years.

Oct. 27, '07. Symptoms similar to but less marked than in the preceding.

Oct. 27, '08. Symptoms have rather fluctuated but are now quite if not more severe than they were a year ago. The body is undersized and poorly developed, the head relatively large and shapeless. Muscular tremors are very pronounced when the

animal is feeding, drinking, or licking salt. The performance of rumination can rarely be observed. The expression and habits are dull and apathetic. Recovery is improbable.

Case IV. (No. 84) Steer, aged 2 years.

Case V. (No. 85) Heifer, aged 3 years.

Case VI. (No. 86) Heifer, aged 2 years.

On October 27 '07, these animals showed mild loco symptoms, alternately dull and excitable; nutrition was defective, growth and development poor. The condition remained unaltered during the winter following, but in the past summer they have improved and are now, October 27. '08, though undersized, in very fair flesh and appearance and loco symptoms are scarcely discernible.

Case VII.—Filly, Clydesdale (No. 89), aged 2½ years. Was loco-affected when a yearling, 1906. Was stall-fed during the winter of '06-07, and had greatly improved when turned out to pasture in the following spring, the disease recurring in severe form in July '07.

October 28 '07. Excessive emaciation. Intense depression, the head carried very low or supported against side of corral or fence post. Overflexion of arms and thighs and some loss of equilibruim. Head relatively large, the superior maxillary bones enlarged, lips and eye-lids swollen, the lower eye-lid everted, translucent film over cornea.

Visual errors, poor appetite, the mouth constantly found packed with food, severe constipation.

November 15. '07. Coma and paralysis lasting 4-5 hours.

December 8 '07. Coma and paralysis ending in death.

Duration of disease, 1½ years.

Autopsy.—Alimentary canal infested with animal parasites, larvae of Gastrophilus, Spiroptera and Sclerostoma; verminous tumours and ulcers in the stomach and intestinal walls. Formidable verminous aneurisms of the coeliac trunk and great mesenteric artery. Large amount of light yellow fluid in the pericardial sac and peritoneal cavity. Ovarian cysts the size of hazelnuts and walnuts. Brain-matter greatly softened. The alveoli in the upper jaw enlarged, and portions of the superior maxilla reduced to the thinness of paper.

Case VIII. Gelding, (No. 90) aged 2½ years. Was loco-affected when a yearling, 1906. Symptoms, October 28, '07, very similar to case VII. The animal rapidly failed, became excessively emaciated and in the final week or two could walk only a few yards.

December 10, '07. Death. Duration of disease 1½ years.

Autopsy.—Sclerostoma encysted in walls of colon and caecum. Gelatinous infiltration of epicardium and auricular myocardium; 300 c.c. of pericardial fluid. A great mass of verminous aneurisms and fibrous thrombi in the coeliac trunk, great mesenteric and branching arteries. Splenic abscess. Cerebrospinal fluid abundant and discoloured; sero-sanguineous effusion between the brain and coverings, the brain matter pinkish grey and softened.

Case IX. Gelding (No. 91), aged 3 years. Was affected when a yearling. Symptoms, October 28, '07, similar to case VII, maniacal periods, vertigo and muscular twitchings being very common. Subsequently these attacks become less and less frequent and finally ceased giving place to intense depression and semi-coma. From January-May, '08, the body was excessively emaciated, the habits and expression extremely melancholic, and paralytic attacks not infrequent. On several occasions the animal lay stretched on the ground for 12-18 hours, the pulse imperceptible, the temperature

95 degrees F. or lower, giving scarcely a sign of life and would finally return to consciousness and regain its usual condition.

May 12, '08. Death, at the end of a paralytic attack lasting 36 hours.

Duration of disease 2 years.

Autopsy.—Alimentary canal infested with animal parasites, the bowels impacted with dry, undigested matter, the mucous membrane presenting extensive ulceration and nodular or tumour formations. Gelatinous infiltration of the subcutis, connective tissues and epicardium. Oedema of the genitalia. Musculature infested with sarcosporidia. (Circumstances prevented the examination of the brain and spinal cord.)

Case X. Filly, (No. 92) aged 2½ years. Was affected as a yearling. October 28, 1907. Malnutrition, cutaneous desquamation, vesicular skin eruption; poor appetite and constipation. Depression was the usual condition, mania or vertigo were not observed to occur naturally but could be easily induced by purposely exciting the animal. The limbs would be overflexed and the gait had the characteristic high-stepping action. The head was relatively large, the muzzle much swollen and with little function of prehension.

This animal was given a course of arsenical treatment, the drug being administered in a powder with sodium chloride, sodium bicarb. and sulphur, and mixed in a feed of bran and oats. Drenches of linseed oil and turpentine were also given. No improvement was apparent, emaciation became more and more excessive and death took place on January 25, 1908. Duration of disease 1½ years.

Autopsy.—The intestinal tract was severely ulcerated, but animal parasites with the exception of a few Gastrophilus larvae had been eliminated, a few sclerostomes remained in the caecum. Verminous aneurisms in the great mesenteric and colic arteries. A large ulcer perforated the small intestine, and the abdomen contained a great quantity of brownish, blood-tinged fluid. The lungs were intensely congested, liver soft and friable, the surface of the spleen petechial. The muscles were very pale and contained sarcospores. Extravasations of fluid in the cranium and spinal canal, the brain substance softened and discoloured.

Case XI. Gelding, (No. 93), aged 3½ years. Was affected when a yearling. October 28, 1907. Symptoms not as severe but of a similar character to case X. A similar course of treatment was given as in the preceding, and with no better result. The animal lived for many months in an extremely emaciated and miserable condition, succumbing during a prolonged attack of paralysis on June 16, 1908.

At autopsy only the musculature was examined and this was found infested with sarcosporidia. Duration of disease 2 years.

Case XII. Mare, (No. 94), aged 12 years. Said to have been a very gentle work animal until May, 1907, when she began to exhibit the nervous symptoms of loco and soon became quite unmanageable. October 28, 1907. Emaciation commencing, depression and stupor alternating with vertigo, usually quiet unless handled. The mare failed rapidly and muscular inco-ordination became apparent.

December 10, 1907, paralytic attack.

December 18, 1907, symptoms of purpura haemorrhagica; a bluish film spreading over cornea of left eye.

December 26, 1907, death. Duration of disease about 7 months

Autopsy.—The characteristic appearances of purpura haemorrhagica. Gelatinous infiltration of the myocardium, 600 c.c of fluid in the pericardial sac, and a great quantity in the abdomen. Adhesions of organized lymph to the peritoneum and surfaces of liver and spleen. The heart weighed nine pounds. The liver contained a few calcareous nodules. Large masses of verminous aneurisms involved the arteries branching from the post aorta. Haemorrhages under the pia, gelatinous œdema of the choroid plexus, dark, pinkish discolouration of the brain substance.

Case XIII Foal. (No. 95), aged 8 months, of mare in case XII. October 28, 1907. Loss of appetite, depression, stiffened gait, swollen face and lips, poor nutrition. November 28, 1907, paralytic attack, and again on December 4, 6, and 7. Death December 8. Duration of disease about 6 months. The feature of the autopsy was the immense verminous aneurisms, larger and more formidable than in any of the preceding cases.

Inoculation Experiments.

(1) Filly, aged 2½ years, received subcutaneously 30 c.c. of defibrinated blood of heifer No. 87.

(2) Mare, aged 5 years, received intravenously 180 c.c. of defibrinated blood of gelding No. 90.

(3) Filly, aged 2½ years, received subcutaneously 180 c.c. of citrated blood of gelding No. 90.

(4, 5 and 6) Mice, each receiving intraperitoneally 1 c.c. of citrated blood of mare No. 89.

(7 and 8) Mice, intraperitoneally, 1 c.c. of epicardial fluid of gelding No. 90.

(9 and 10) Mice, 1 c.c. of cerebrospinal fluid of gelding No. 90.

(11 and 12) Mice, 1 c.c. of brain emulsion of gelding No. 90.

(13 and 14) Rabbits, intraperitoneally, 30 c.c. of defibrinated blood of gelding No. 90.

(15) Puppy, received an intramuscular injection of 30 c.c. of citrated blood of No. 90.

No visible reactions followed the inoculations in equines, rabbits, and the puppy. The mice in expts. No. 7 and 11 died in nine and six days, respectively. The ascitic fluid in these animals contained immense numbers of micro-cocci, further inoculations of which produced a rapid form of septicoemia and death in one to two days; the microbe doubtless being a contamination of the material inoculated. Thus, in these limited experments, the disease was not transmitted.

Contact experiments have likewise failed.—A healthy cow and calf were placed in a shed with two locoed cattle every night for four months, and for nearly a year have been pastured with four locoed cattle, and have not contracted the malady.

Similarly, healthy horses have been stabled and pastured with locoed horses, with negative result. There are loco weeds in abundance in these pastures but no evidence of the disease, or that the loco-habit has been transmitted to or acquired by any of the Quarantine Station animals.

Temperature Charts.

The temperatures recorded in the accompanying charts, I to VI, were taken, it will be seen, in a late or final stage of the disease, and during a period when depression, or stupor and emaciation were the prevailing symptoms, and when the animals could be easily handled. An attempt to obtain a temperature record during an earlier stage of the malady had to be abandoned owing to the great difficulty in controlling animals when symptoms of mania and vertigo are uppermost. Taking the normal temperature as 100·4° F. with a daily fluctuation of about 1° (which proves to be the usual average in healthy horses at this station) in equines, and as 101·4 in bovines, the records in charts I—IV appear considerably below normal. The daily fluctuations are very irregular and frequently cover 4° , occasionally 6° and over.

The pulse beats in locoed equines are usually soft, slow and irregular frequently under 30 and rarely over 40 per minute.

Explanation of Photographs.

1. Animal No. 91, April 26, 1908. In the final stages. Depression, misery and emaciation.

2. Animal No. 92, November 25, 1907. In the final stages. Depression, misery and emaciation.

3. Animal No. 93, December 8, 1907. Six months before death. Facial distortion.

4. October 27, 1908. Locoed animals on arrival at Quarantine Station.

5. Animal No. 92, December 6, 1907. Facial swellings.

6. Animal No. 89, December 6, 1907. Facial swellings.

7. Animal No. 94, December 18, 1907. Facial swellings, purpura haemorrhagica.

8. Animal No. 89, November 25, 1907. Great depression.

9. Animal No. 91, October 27, 1907. Stupor alternated with vertigo, locomotion uncertain, sometimes ataxic.

10. Animal No. 94, December 18, 1907. The same as in No. 7.

11. Animal No. 91, December 18, 1907. Vertigo, stupidity, enlargement of the head.

12. Range steer, September 18, 1908. Exhibited mania, vertigo and visual errors, could not be driven and staggered over a cut-bank falling into the creek below, where the photo was taken.

13. Range Steer September 18, 1908. Exhibited muscular tremors, depression and abnormal gait.

14. Range Steer, September 18, 1908. Exhibited muscular tremors, depression and abnormal gait.

15. Range Steer, September 18, 1908. Exhibited muscular tremors, depression and abnormal gait.

16. Animal No. 83, December 6, 1907. Similar to preceding and facial deformities.

17. Animal No. 84, December 6, 1907. Similar to preceding and facial deformities.

APPENDIX No. 11.

(E. A. WATSON, V.S.)

LETHBRIDGE, ALBERTA, March 31, 1909.

SIR.—I have the honour to submit the following brief note in reference, more or less, to:—

THE LIFE HISTORY OF TRYPANOSOMA EQUIPERDUM.

The original strain of *T. equiperdum*, obtained by me in February, 1907, from a mare clinically affected with Dourine, has been maintained to date by a number of passages through equines, and the periodicity of trypanosomes in the blood or fluids of typical lesions occurring in the experimentally infected animals continues. This has enabled me to secure a fairly large collection of specimens of the parasite in different stages of development and to study the morphology of the trypanosome as it occurs in its natural host, one of the equidae. Several observers have called attention to the difficulty of studying the parasite under these conditions owing to its long periods of absence from, and its paucity in numbers when present in the blood or body fluids of the horse, and to the desirability of doing this whenever possible as the existing descriptions of the parasite are mostly taken from its appearance in the blood of infected laboratory animals, in which, it is said, the cyclical development of the trypanosome and the course of the disease differs from that occurring in the horse. My study is still incomplete but will be submitted, I hope, with other records of this investigation at the end of next March. In this brief note I chiefly desire to call your attention to some recent views regarding the life-history of trypanosomes in general and of *T. equiperdum* in particular, and a consideration of these views in their applicability to the occurrence of Dourine in Canada or to the experiments in connection with that disease being carried on at this station.

In The Huxley Lecture on 'Recent Advances in Science and their bearing on Medicine and Surgery' delivered by Sir Patrick Manson, on October 1, 1908, (Jour. Trop. Med. and Hygiene, Vol. XI, No. 22, and 'The Lancet,' October 3, 1908), there is advanced the hypothetical law that—

> 'blood-haunting protozoa having arthropod vectors require, and make use of, these vectors for necessary sexual developments,

and the statement that if the law thus formulated applies to this

> 'trypanosome (of sleeping sickness) or any trypanosome for that matter, it applies to all trypanosomes; . . . . . .'

and,

> '. . . . . that the argument founded on the direct communicability of dourine in the apparent absence of an insect intermediary for its germ *T. equiperdum* is not valid;

Manson. 'Believing . . . . . in the necessity for sexual reinvigoration in all animals, including the protozoa; and believing that a sexual stage occurs in the case of other trypanosomes, I believe it must occur in that of dourine *T. equiperdum*, and . . . . . that it is passed in some insect as yet unrecognized. . . . . some apterous, hemipterous, or semi-parasitic insect phylogenetically allied to the tsetse flies is its intermediary. This insect has not been found, probably because it has not been looked for in the proper way.'

The foregoing will no doubt be subjected to much criticism and the argument against Manson's law, founded on the direct natural transmission of dourine, maintained until more is known concerning the life-history of the pathogenic trypanosomes. Salvin-Moore, Breinl and Hindle, (Annals of Tropical Medicine and Parasitology, Vol. II, No. 3, Page 199), in 'The life-history of T. Lewisi,' and previous to the publication of Manson's address, state that the trypanosome of dourine—

> 'under normal and natural conditions is not transmited by any fly, or biting animal, but simply through contact. It was clear, therefore, that in this instance we had a trypanosome life-history which is not normally complicated by the passage of the parasite through any intermediate host. What ever life cycle *T. equiperdum* may possess, this cycle must be completed, and can be studied in the body of a single host.'

The direct transmission of the parasite of dourine from infected to healthy equines, by subcutaneous or submucosal inoculation, has, in my hands, been successful in producing in every case, and after varying periods of incubation ranging from a few days to several months, trypanosome infection and exceedingly chronic though typical but mild symptoms of dourine. The duration of the infection in these experimental equines ranges from a few months to two years and has terminated fatally only in one case, namely, a foal, which succumbed in the 5th month of the disease. The other animals have maintained a very fair general health and condition save during the paroxysms, which have occurred but rarely and are usually of short duration, the periods between them, of intermission or latency, very prolonged. The mare from which this present strain of trypanosome was first obtained, is now in the 30th month of the disease, the last observation of trypanosomes in the blood or body fluids was made during a paroxysm occurring in the 13th month after infection, but the mare has never regained proper muscular co-ordination and is in a very poorly nourished condition. To go back still further, the stallion that infected this mare succumbed to dourine in the 21st or 22nd month of the disease. These observations do not furnish any evidence that this strain of *T. equiperdum*, after successive passages through equines, has increased in or even maintained its virulence, but rather an indication that it has suffered some loss, although it is as yet too early to make any definite statement as to the latter. There may be taken into consideration the fact that while equine inoculations have all been successful in producing a trypanosomatic, though as yet not very fatal infection, inoculations in laboratory animals, contrary to the experience of other workers with tropical strains of *T. equiperdum*, have proved futile. My attempts to transmit the infection to dogs, young and old, cats, rabbits, mice and white rats have failed. The strain of *T. equiperdum* used by Salvin-Moore and Breinl was a very virulent one, 'after injection no parasites appear until about the third day. They then multiply with extreme rapidity, and kill the animal in about four days after their first appearance in the blood.' The inability of the trypanosome to infect rats and other susceptible laboratory animals then, together with the abnormally delayed or mild results of infection in equines, may be considered as an indication of a loss in virulence. It will be a matter of great importance to ascertain in what way further passages of this trypanosome through equines affect its virulence. The failure of transmission to small animals, while it does delay and hinder progress in the work in some respects and prevents the opportunity of carrying out certain studies and experiments, may not ultimately prove of great disadvantage as whatever work and experiment has been done here has been directly in connection with the parasite and its natural host, the horse, and the results, though more limited, so far as they go, are more or less positive and definite and not subject to the problematical conditions, requirements and conclusions attending artificial trypanosomatic infection, the duration and cure of, immunity and prevention from, in laboratory animals.

If Manson's hypothesis should prove to be correct, and the insect intermediary necessary for the sexual reinvigoration and, therefore, virulence, of the trypanosome,

exists only in the tropics, it would afford a possible explanation of the comparative mildness of the dourine infections in Canada, and a hope that the trypanosome causing it will eventually become non-pathogenic, even for equines—the trypanosome, after numerous direct passages through equines, gradually losing its sexual reproductive faculty, especially in native breeds of horses and horses raised in this country, resulting in prolonged periods of latency, or the dying out of the infection and recovery.

I hope to maintain the virus with which I am now experimenting until more certain knowledge has been obtained on the questions outlined in the foregoing. Dourine, as we see it, is so exceedingly chronic, frequently obscured, and often difficult to diagnose that progress in this investigation is necessarily slow and conclusions can only be arrived at with great caution.

I have the honour to be, Sir,
Your obedient servant,

E. A. WATSON,
In charge of Quarantine Station.

To The Veterinary Director General,
Ottawa.

APPENDIX No. 12.

A CONTRIBUTION ON SARCOSPORIDIOSIS.

With especial reference to its associations with 'Loco' disease and Dourine, and the possibility of mistaking the spores of Sarcocystis for certain so-called developmental forms of trypanosomata, by E. A. Watson, V.S.

Although Sarcosporidiae are of common occurrence in the musculature of domesticated animals, very little is known concerning the life-history of the parasites, and nothing but supposition as to the means by which their hosts become infected. Further, a marked uncertainty or contradiction exists as to the power these parasites possess in producing a serious and recognizable disease.

It would appear that in the majority of cases of infection, in otherwise healthy animals, the invasion is a very limited and harmless one, involving to a more or less slight extent the muscles of the œsophagus and tongue, but that in certain conditions, generally of obscure origin, and briefly designated under the term 'cachetic,' the parasites may overrun the entire muscular system and become a grave menace to the life of their hosts.

A brief resumé of the more important observations on the subject by various authors is here given:—

NOMENCLATURE.

(*a*) Muscular Psorospermosis.
(*b*) The sarcoysts, tubes, sacs or utricles of Miescher.
(*c*) Rainey's corpuscles (the spores of the cysts).
(*d*) Sarcosporidiosis.

It is stated in Neumann's Parasites,[1] that about 40 per cent of pigs may be infected. Moulé, quoted by the same authority, found the parasites in 98 per cent of cachetic sheep, usually numerous in proportion as the cachexia is more accentuated. In 100 sheep in good condition he met with them in 44, and then always in small numbers. Of 100 oxen condemned for being in extremely bad condition he found 37 infected with Sarcosporidiae. In cattle in good condition he found them only in three instances.

Schulze noted their presence in the muscles of the forehead of a horse, destroyed on account of paralysis of the anterior limbs. Some similar examples are also recorded by Neumann. The following extracts are quoted from Minchin's[2] account of the Sarcosporidiae:—

> 'In acute cases all the skeletal muscles may be infected, even those of the head . . . . . the parasite grows until it distends the fibre to five or even ten times its normal breadth, absorbing the contractile substance as it does so. . . . . The cysts are observed to degenerate in some cases, their adventitious walls becoming calcified, in other cases the cysts burst and spread their contents in the surrounding tissues, destroying the muscles and producing tumours and abseesses.
>
> 'The symptoms of Sarcosporidiosis in the pig are paralysis of the hinder extremities, a skin eruption, and general symptoms of sickness, such as thirst, increased body-temperature, and dim, streaming eyes.
>
> 'The disease is sometimes the cause of fatal epizootics among domestic animals, especially sheep. In the mouse also Sarcocystis muris is a very deadly

parasite. Laveran and Mesnil have isolated the toxine of the Sarcosporidian parasite of the sheep, and named it Sarcocystine, a substance found to be extremely toxic for the experimental rabbit.'

From some feeding experiments by Smith and others, quoted by Minchin it seems extremely probable that infection naturally occurs through the digestive tract. Sarcosporidiae have rarely been found in man; a few cases of fatal infection are mentioned by Neumann, and others by Bulloch.[3]

Ostertag[4] does not consider the eating of flesh of infected animals dangerous to man. Neumann again thinks that infected meat should be prohibited for human use 'because of its bad appearance and diminished nutritive value.' According to the same author 'muscular Psorospermosis is not betrayed during life by any appreciable signs and the parasites can be detected only at autopsy.'

The following cases have come under the writer's personal observation:—

(a) *In Cattle Suspected of Loco-poisoning.*

Case I.—(animal No. 27) heifer, 3 years old; said to have developed symptoms of loco-poisoning as a yearling.—(Dr. Hilton.) Received at quarantine station October 27, 1907; stunted, undersized appearance, and in poor flesh; coat staring and rough, on passing the hand over the body numerous small scurfy nodules could be felt, knots of hair matted with moist, bran-like scales. There were frequent prolonged extensions of the head and neck, accompanied by a more or less constant trembling and agitation of the muscles of these parts, especially of the jaws, and most marked during attempts at feeding, the power of the prehension of food being practically lost, and mastication very difficult and incomplete. Death occurred November 14, 1907.

Principal features of Autopsy.—Gelatinous infiltration, light yellow to an orange colour, of the connective tissues, lungs and kidneys. The inner covering of the brain, the pia, very dark, almost black in places, and of a metallic lustre. The heart enlarged, appearing soft and flabby, yet proving tough on section. The endocardium sprinkled with minute whitish granules, very numerous.

Microscopical.—Heart and its endocardium very extensively infested with Sarcosporidiae. Unfortunately, by the time these prepartions had been examined and the parasites recognized, the carcase had been disposed of, and none of the skeletal muscles preserved. There was an immense deposition of greenish brown pigment granules in the covering of the brain and the cells of the cortex.

Case II.—Heifer (animal No. 88). The symptoms and condition being so similar to Case I., they need not be further described, beyond adding that there was a thin watery discharge from the nostrils, dimmed eyes, and occasional lachrymation. After being under observation for three months, in which the disease made steady progress, until the animal became quite helpless, she was destroyed.

Principal lesions at autopsy.—Fibrinous inflammation of epicardium. Minute whitish specks showing through endocardium. The heart as a whole too voluminous.

Lungs.—Chronic, suppurative inflammation. Small sacks or cysts, about the size of a bean or small nut, and rather resembling lymph nodes, could be squeezed from the cut surface of the parenchyma. The appearance of the skeletal musculature slightly granular, cloudy and light brownish-red colour. The brain in this case did not reveal any abnormalities visible to the eye. The molar teeth were very irregular and badly developed, and the bones of jaws and face thin and brittle, though rather enlarged.

Microscopical.—The following muscles, organs or tissues were examined for Sarcosporidiae. (1) Psoas, (2) diaphragm, (3) tongue, (4) larynx, (5) upper and lower lips, (6) the gums, (7) the jaws, masseter and buccal, (8) the muscles of the poll, splenis and complexus, (9) of the eye, (10) of the limbs, the adductor magnus, flexor

pedis perforatus, flexor metacarpi externus, (11) the heart, (12) the liver, (13) spleen, (14) kidneys, (15) lungs. In every specimen of every muscle examined, the parasites were exceedingly numerous; Plate I., figs. 1 and 2, representing the degree of invasion. In the lungs the semi-purulent cysts consisted of leucocytes and disintegrating cellular tissues; a few Sarcospores in process of decay were seen. It is extremely probable, but not proved, that these inflammatory areas in the lungs resulted from the presence and disintegration of Sarcocysts. In the spleen, liver and kidneys, a very few degenerating spores were seen and much granular pigment matter.

The myocardium contained very numerous parasites. While, as already stated, all of the skeletal muscles were extensively invaded, those of the head, poll and extremities were, if anything, the more heavily infested.

Case III.—(Animal No. 83) Steer, 3 years old. Similar condition to preceding cases, but the disease not so far advanced. During the past three months, in which the animal had been hand-fed and well cared for, the symptoms have increased in severity. Depression is deepening, muscular action stiff and slow. Jaws swollen. The animal was cast and a small fragment of muscular tissue excised from the tongue, Flexor Metacarpi Externus, the masseter, and one of the cervical muscles. Sarcospores were found in preparations of each, not as numerous as in cases I. and II., but still fairly plentiful. The present condition of the animal leaves little chance for recovery.

Cases IV., V. and VI.—(Animals 84, 85 and 86.) Steer and two heifers, two, three and two years old respectively. The condition is approximately the same in each, namely, slow, sluggish muscular action, depression, and a dejected, unthrifty appearance. These animals were cast and operated on as in Case III. The muscles examined and the results as follows:—

Case IV.—Masseter—Sarcosporidiae numerous.
Upper cervical—Sarcosporidiae fairly numerous.
Tongue—Sarcosporidiae fairly numerous.

Case V.—Flexor metacarpi externus—Sarcosporidiae not found.
Middle cervical—Sarcosporidiae fairly numerous.
Tongue—Sarcosporidiae very numerous.

Case VI.—Lower cervical—Sarcosporidiae numerous.
Tongue—Sarcosporidiae numerous.

Thus in all muscles examined, with the single exception of a very small fragment of the flexor metacarpi, Sarcosporidiae were present.

(b) *In the Equines Suspected of Loco-poisoning.*

Case VII.—(Animal No. 91.) Gelding, rising 3 years old showing symptoms of loco-poisoning as a yearling.—(Dr. Hilton.)

The condition, briefly, on admittance to the quarantine station, October 27, 1907, depression, restlessness; slowly wandering about without aim or object. Slow, high, hesitating gait, as if walking over obstacles. When undisturbed, the head is carried very low, down to the level of the knees, the neck often twisted. When suddenly startled, there is a brief period of excitement and the animal may stagger and fall. At present date, after a period of five months, the condition has become greatly aggravated, and it does not look possible for the animal to live much longer. Flexion and extension of the limbs are extreme, and brought about very slowly, and it is quite impossible for the animal to run, trot or move out of a slow walk. The bones of the face appear much swollen, and the expression truly melancholic and pitiable. Small sections of the tongue and masseter muscle were removed and Sarcocysts were found in micro-sections of each. The parasites were few in number, and small, though containing spores.

CASE VIII.—(Animal No. 93.) Gelding, rising 3 years old, also showing symptoms of loco-poisoning as a yearling. On October 27, 1907, the condition was very fair, symptoms only slightly noticeable; but during the past five months the disease has greatly advanced until the present condition is quite as bad as the preceding case. A fragment of the flexor matacarpi externus muscle only has been examined. Sarcocysts were present, few in number, and in a young stage of growth. Previous to the finding of Sarcosporidiae in any of the foregoing cases, five loco-diseased equines had succumbed. The parasites not being suspected none of the skeletal muscles were microscopically examined. A portion of the myocardium was preserved in each case, in which no parasites were detected. A section of the tongue of one of these animals had been preserved, and in this Sarcosporidian cysts were found.

(c) *In Dourine-affected Equines.*

CASE IX.—(Filly, 9 months old). Experimentally infected with Trypanosoma Equiperdum. In the fluid of a cutaneous swelling that followed the inoculation free spores of Sarcocysti together with trypanosomata were found, each species of parasite being present in about equal numbers.

CASE X.—Filly, 2 years old.) Inoculated with the blood of a Dourined stallion. Seven months later, in the fluid of a cutaneous swelling, free Sarcospores were present, mostly crescentic forms, and indistinguishable from the crescents described by certain authors (see Plate II.) as developmental forms of Trypanosomata. Trypanosomes were not seen in this animal at this time.

CASE XI.—(Mare, 3 years old), in final stages of naturally acquired Dourine. Sarcospores were found free in the fluid of a swelling on two occasions, the swellings resulting from some serum-injection experiments.

(d) *In a Cachetic Filly, the Cause of the Cachexia Not Known.*

CASE XII.—(Filly, 2 years old), one of six supposedly healthy fillies shipped to quarantine station for experimental work. It was noted on arrival, that this animal (No. 68) had an unthrifty appearance, stiffened gait, rough hide and was in poor flesh. The mucous membranes were pale. She was several times carefully examined for signs of Dourine, but none were detected. The cachexia became more evident during the autumn and winter, with increasing stiffness of the muscle and gait, especially of the hinder extremities. The animal was found dead in the pasture on March 4th last, the body frozen.

The muscles of the œsophagus, tongue and extensors of the fore-arm were infested with Sarcosporidiae. They were not seen in the myocardium or the muscle of the eye; none other were examined.

In cases I. to VIII. of Sarcosporidiosis in 'locoed' animals certain symptoms and conditions are described. These are more or less characteristic of 'loco-disease.' This disease itself is now under investigation at this station and will be the subject of a separate and later report, and is only mentioned here in those respects in which it may bear a possible relation to Sarcosporidiosis, or where the writer is unable to differentiate between the symptoms of the one and the other. Certainly, a great variety of conditions and symptoms occur in the course of the malady or maladies attributed to loco-poisoning. There appear various forms of mental derangement, from mania in the first stages to a dense stupor or comatose condition in the latter; disorders of the muscular system from increased reflexes to spasms, atrophy and paralysis; osseous enlargement or degeneration, especially of the jaws and parts of the skull; impaired vision; depravity, emaciation, etc. The history in most cases shows that the disease is very chronic, and often of a fluctuating or intermittent character. The muscles of the head and neck, especially of the jaws, the lips, and the

PLATE I.

Fig. 1.

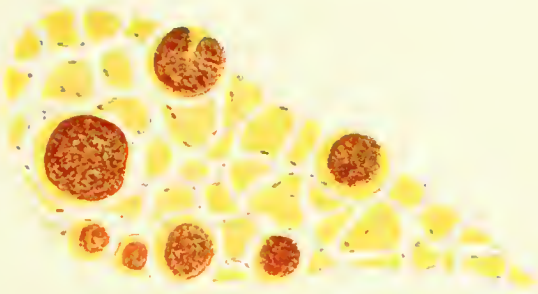
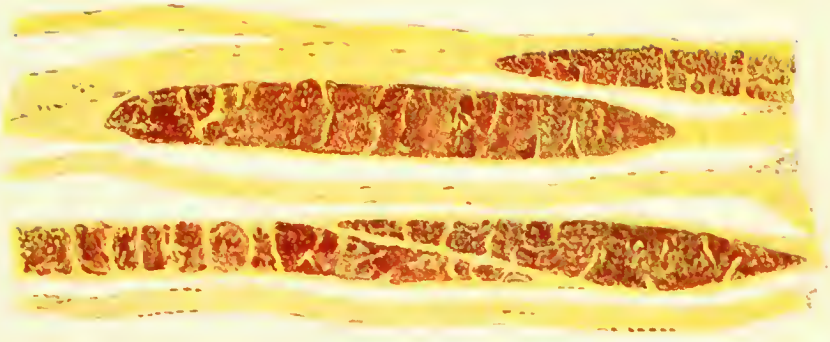


Fig. 2



Gd. S. H. E.A.W.

Fig. 3.

PLATE II.

Fig. 1.

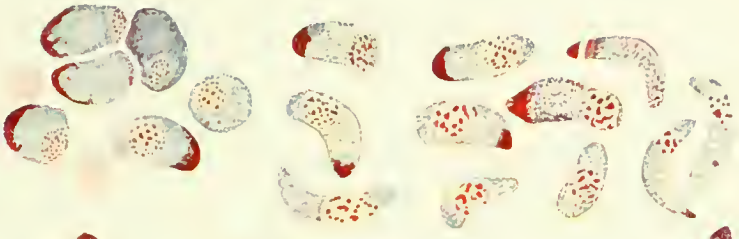


Fig. 2.

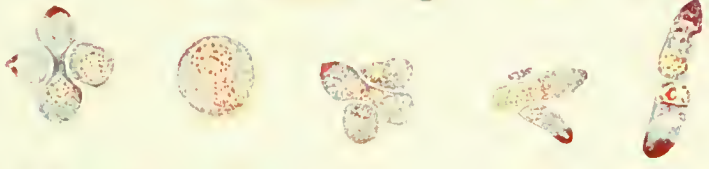


Fig. 3.

Fig. 4.

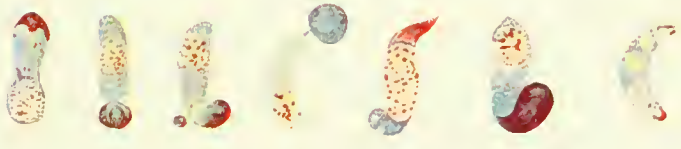
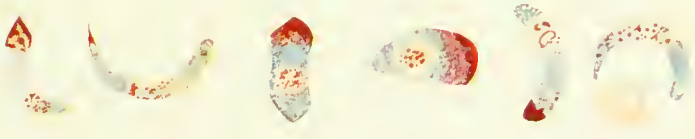


Fig. 5.



Gd. S. H. E.A.W.

tongue exhibit tremors, spasmodic contractions or prolonged after-contractions. The jaws sometimes remain rigid, the head and neck extended. In equines cramps are not infrequent, a limb is slowly extended as far as possible, remaining in that position for a short time, then slowly and extremely flexed, held high above the ground for a minute or more, the animal moving off at a limp. The contractility of the muscles is delayed, slow, and hesitating, not arrested at the proper moment, resulting in over-flexion and extension. This might be explained by absorption of, pressure on, or breaks in the continuity of the protoplasm of the muscle fibres by the Sarcocysts, and consequently, a greatly reduced conductivity. It is equally true, that the origin of this muscular disturbance may be seated in the nerve cells of the brain, as a result of loco-poisoning. If the latter hypothesis is correct, it is a strange coincidence that in the few cases examined the muscles most affected were those in which the parasites were most numerous. It is difficult to trace any relationship between the disease of the osseous structures of the jaws and face and the disease of the muscles; and yet, as mentioned before, Laveran and Mesnil isolated an extremely active poison from the Sarcocystis-tenella of the sheep (unfortunately, the original publication by these savants is not at hand) and it is permissible to assume that a similar toxine is elaborated by the parasites infesting the ox and horse. Sarcosporidiæ appear more numerous in 'locoed' oxen than in horses; in the latter intestinal parasites are exceedingly plentiful, and very formidable-looking verminous aneurisms have been found at each autopsy. The condition favourable to these parasitic invasions may very likely originate from ingestion of the loco-weed, and possibly to some other dietetic conditions peculiar to the ranges where loco-disease prevails. It might be mentioned in passing that the writer has on several occasions examined specimens of meat, purchased from a local butcher, for Sarcosporidiæ. In all, three ox-hearts, an ox-tongue, and several joints of beef have been examined, each specimen being from a different animal. Of these only one was found infected with Sarcosporidiæ, a heart, the parasites being very numerous. This heart looked decidedly unhealthy. There were a few fibrinous growths on the epicardium, considerable gelatinous œdema, and the little fat remaining, very soft and yellow.

Concerning the Parasite, Sarcocystis.

Class—Sporozoa; sub-class—Neosporidæ; Order—Sarcosporidiæ; Genus—Sarcocystis, Ray Lankester. (After Minchin.) Infecting domestic animals there are probably several distinct species of Sarcocystis, but these have not been clearly differentiated.

In those infections of the horse and ox, already described, and even in the most heavily infested cases, very young forms of parasites could never be found; only the trophic phase was met with, accompanied by spore-production, as in all of the sub-class of Neosporidiæ. In cattle the youngest trophozoites observed were lodged in the muscle fibre, and, though macroscopically invisible, had attained a considerable size and formed several hundred spores. The larger parasites, distending the muscle fibres, are just visible to the naked eye as minute whitish rods or specks. In the equines, Cases VII. and VIII., the parasites averaged a much smaller size than in the bovines, the smaller trophozoites containing only the spore mother-cells or pansporoblasts, preliminary to sporulation. In these young forms the radially striated enveloping membrane is well marked (Plate I., fig. 3); as the parasite matures the membrane becomes thinner and the striations disappear, until, in the largest forms as seen in cattle, the parasite appears to be held only by the sarcolemma of the muscle fibre. Evidently the parasites are able to multiply within the body of their host until every part of the muscular system is invaded; this endogenous mode of infection is hypothetically brought about by rupture of the cysts and dissemination of the spores, and yet, if this is actually the case it is strange that even in such severely infected cases

as I. and II., no intermediate forms between the relatively minute spore and large young trophozoite could be found.

The spores themselves, the clamydospores, vary considerably in shape, size, and in the arrangement of their chromatin and polar capsule. In form they appear in all gradations from a perfect sphere to an oval, bean-shaped or crescent form, though each type is symmetrical and doubtless represents different stages in the development of the spore-cell. The spherical forms would appear to be the younger and the crescentic the older, as in each trophozoite containing many spores, some are found disintegrating and these are almost invariably of a crescentic variety.

The chromatin granules of the nucleus of the spherical spore are relatively small and scattered, and the polar capsule is granular and only partially developed; in the next stages, the chromatin collects into small bodies, and one end of the cell becomes pointed, and at this end is always found the polar capsule. This capsule stains with difficulty with most dyes, and not at all with the ordinary basic stains; even with some of the Romanowsky preparations only a faint pink ectoplast at one end of the spore, and where the protoplasm has receded, denotes the position of the capsule (see Plate II., fig. 3, No. 6). The Romanowsky stains, however, are preferable to any other, and, properly prepared, differentiate very clearly and beautifully the structures of the cell. A single granule, staining black, and, more rarely a double granule, may occasionally be seen, situated about half-way between the nucleus and the pointed extremity; this is doubtless the centrosome. (Plate II., fig. 7—the end spore, fig. 3, Nos. 1 and 6). In the older spores the nuclear chromatin collects into round or irregular bodies, eight to sixteen in number. The frequent finding of a large spherical spore and a crescent lying intimately, and in some cases apparently fused together is suggestive that the former is the female cell and the latter the male gamete (Plate II., fig. 3, No. 5). A large spherical form, probably resulting from the fusion of these two elements, may be seen dividing directly into two, three or four. (Plate II., figs. 2 and 3).

The possibility of mistaking the spores of Sarcocystis for developmental forms of Trypanosomata.

From time to time mention is made by various workers, of large 'crescentic bodies' or 'vermicule-like forms' occurring in the blood of animals affected with trypanosomiasis, and are generally described as developmental stages in the life-history of a species of trypanosomata.

Holmes,[5] in an article entitled 'Trypanosomiasis among cattle in India,' states, 'In the blood taken from two infected bulls I found peculiar developing forms bearing a striking resemblance to the crescents of human tertian fever. These are large crescent-shaped bodies staining blue and containing numerous chromatin granules.' Some of these forms of trypanosomata (?) are illustrated by author.

Lingard[6] in 'Species of trypanosomata observed in Bovines in India' mentions the above observations of Holmes, and further describes similar forms met with by him (Lingard), also illustrating them in coloured plates (Plate II., fig., 20, and Plate III., fig. 7, *Journal Tropical Vet. Science,* Vol. II., No. 7, 1907), stating 'These crescent forms, above described, are frequently co-existent with the piroplasma bigeminum or the smaller forms in the blood of Indian cattle. Possibly the presence of the crescents in Queensland bovines may point to the fact that these animals in some instances are also the host of a large form of trypanosoma, which up to the present has not been demonstrated in their blood.' Hunt, quoted by Minchin (page 269) and also by Lingard, 'found crescents in the blood of cattle, and observed their change into a spheriodical shape, but while comparing these bodies to the crescents of malarial parasites, he at the same time regards them as a form of sporulating body, producing spores endogenously.' Martin[7] in criticizing the observations of Holmes states,

'Raymond also afterwards found them (*i.e.* the crescents) in the cattle of Bengal, and he is inclined to the opinion that they have nothing to do either with trypanosomiasis or piroplasmosis, but that they are really Sarcosporidia.' The writer ventures to express a similar opinion. At first, in finding them in the cutaneous swelling of Dourine-affected equines, side by side with mature and unmistakable trypanosomes, and after a careful comparison with the illustrations and descriptions furnished by Holmes and Lingard already referred to, and to which they appeared identical, he was inclined to consider them as developmental forms of trypanosomata. But subsequently, when positively no difference could be detected between these forms and certain of the spores of Sarcocystis isolated from cases I. to VIII. and case XII., he (the writer) became convinced that they belong to the latter genus of a parasite, and excludes any relationship between these crescents and trypanosomata. Certainly, such forms of the spores of Sarcocystis as are here depicted, Plate II., fig. 5, Nos. 2 and 6 and some others, may very easily be mistaken for trypanosomes in which the flagella and undulating membrane have been cast off, for 'stumpy,' swollen forms. It is of great importance, therefore, in diagnosing such a serious infection as Trypanosomiasis from blood specimens to remember the possibility of the presence of Sarcosporidia and their likeness to questionable forms of trypanosomata.

Conclusions.

1. The parasite Sarcocystis under certain conditions becomes a very important factor in disease, invading the entire musculature of their hosts, with serious or fatal consequences.

2. Sarcosporidiosis may be closely associated with, and is probably a very frequent sequel to, the disease of horses and cattle known as 'Loco-disease.' It may complicate the diagnosis of this disease, and also of Dourine, and probably of some others, and retard or prevent recovery from these and similar cachectic conditions.

3. The crescentic spores of Sarcocystis bear a striking resemblance to 'Cresentic-bodies' that have been described as developmental forms of trypanosomata, and it would be unsafe, or quite erroneous to diagnose an infection by the latter from the presence alone of those crescentic bodies.

4. The Sarcosporidiæ are deserving of more detail study and investigation than has hitherto been accorded them, both from a zoological and a pathological standpoint.

Explanation of Plates.

Plate I.

Fig. 1.—Cross-section of bundle of muscle fibres infected with Sarcocysts (from splenius muscle of heifer, Case II., hæmatoxylin and picric acid. Leitz objective No. 3 Ocular No. 3.

Fig. 2.—Longitudinal section of the same.

Fig. 3.—Young parasites showing radially striated envelope, and pausporoblasts from flexor metacarpi externus muscle of a horse, Case III. Objective No. 6, Ocular No. 3.

Plate II.

Showing the spores of Sarcocystis, $\frac{1}{12}$ oil immersion, ocular No. 3.

Fig. 1.—Variations in size, shape nuclear arrangement, and formation of polar capsule.

Fig. 2.—Nos. 1-4, and fig. 3, Nos. 1-3. Dividing forms. Note the centrosomes in fig. 3, No. 1.

Fig. 3. No. 5.—Gametes or Zygote formation (?).

Fig. 3. No. 6.—An example of spores more lightly stained, and showing only the position of the polar capsule.

Fi. 4. Nos. 1-6.—Constriction of the protoplasm, and extended bodies (?), No. 4, suggesting that the pointed extremity of the crescent spore had penetrated one of these bodies.

Fig. 1-4.—Are taken from Sarcosporidiae of the ox.

Fig. 5.—Represents types of spores found free in the fluid of cutaneous swellings in Dourine-affected equines.

All figures in Plate II. are stained by the writer's modification of the Romanowsky method, prepared as follows:—A polychrome blue is made by one per cent solution of medicinal methylene blue in a one-half per cent aqueous solution of sodium bicarbonate, heating and evaporating to dryness over a water bath. The residue is powdered and two solutions then prepared—

A.—35 ccm. B. 4 ccm. in 16 ccm. of methyl alcohol.

B. 0·5 per cent eosin in methyl alcohol and mixed in the following proportions:—

A.—35 ccm. B. 4 ccm. in 16 ccm. of methyl alcohol.

This solution is slightly alkaline (very useful for some purposes) for the study of Hæmatozoa and Sarcosporidiæ. A drop or two of an exceedingly dilute solution of acetic acid in alcohol should be added, care being taken not to over neutralize, and the stain applied as in Leishmann's and other alcoholic Romanowsky stains.

The proportions of A and B may be varied slightly increasing the amount of eosin according to the reaction desired, and the stain may also be further diluted with methyl alcohol to advantage.

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APPENDIX No. 13.

RED WATER INVESTIGATIONS IN BRITISH COLUMBIA.

by Thomas Bowhill, F.R.C.V.S., F.R.P.S.

Vancouver, B.C. March 31st. 1909.

Interim Report, July 14th, 1908, on the prevalence of Red Water amongst cattle in the districts adjoining the International Boundary in British Columbia and the State of Washington, U.S.A.

Dr. Hutchinson, acting under instructions from his Government, requested me to show him some cases, if possible, of the Red-Water disease prevailing amongst cattle on this side of the International Boundary. Dr. Hutchinson was particularly anxious to compare the conditions present here with those on the other side of the line. I consulted Dr. Tolmie, and there being no official objection to the request, we left for the Mount Lehman District, on the 9th. of July. In that district, we visited the farms of Mr. White, Mr. Phillips, Mr. Morrison and Mr. Taylor. In all of those places we found typical cases of Red-Water; a very interesting case was found in a young bull. I examined the blood of all the cases and was able to demonstrate to Dr. Hutchinson the presence of the parasite previously described in my former reports; the most parasites were observed in the bull's blood. We also visited Peardonville, close to the Boundary, and Mr. Peardon informed us that he had no cases at present; he also stated that he could find no ticks on his cattle and has not seen any since last fall, when I obtained some off one of his cows; this animal died this spring from Red-Water. No ticks could be found on any of the other cattle examined, but were declared to be plentiful on rabbits and squirrels. On the 12th. of July I accompanied Dr. Hutchinson to the State of Washington, in order to observe the disease prevalent in that area. We went by rail to Blaine, and from there we drove to Lynden; en route we heard of many cases, and in many instances the loss has compelled the farmer to quit keeping cows. On the 13th of July, we visited the Ferndale, and Custer districts, lying west of Lynden. In those regions we saw several typical cases clinically indistinguishable from those observed in British Columbia; blood specimens were obtained from all of the cases examined. All of these sick cattle had been purchased a few days previous to our arrival by the Washington State Veterinarian, for the Experimental Station at Pullman. I was also informed that the farmers in the Ferndale district had recently, at a meeting held in that district complained of the loss sustained by this disease. No further information being obtained in this area we returned to Lynden, and left the same day for Sumas. At Clearbrook and about 1½ miles from the International Boundary a typical case was found—blood preparations were made. The farmers living between Sumas and Lynden all admitted the existence of a great many cases. The disease also appears to extend from Lynden, down the Nooksack River, almost to Bellingham. No ticks were found on any of the cattle examined, but rabbits and squirrels were reported to be infested, especially the rabbit. In my previous reports regarding the ticks I found at Mr. Peardon's farm I stated that they probably belonged to the genus Rhipicephalus, but since then I have been considerably perplexed regarding the exact determination of the species.

This spring I obtained a different variety of ticks from a squirrel at Mount Lehman. In order to get a reliable identification of the species these ticks belong to.

I forwarded them to Professor Neumann, Toulouse, France; he replied that the tick I took off the cow since dead of Red-Water at Mr. Peardon's was a Dermacentor Reticulatus, Fab. and that the tick taken off the squirrel was an *Iyodes* which the Professor believes is a new species.

I may state, that in the blood of the squirrel, I have seen intra and extra-corpuscular parasites while in the chipmunk, I have observed parasites also, but the latter resemble a spirochaete or intermediary stage between the piroplasmata and a trypanosome. These observations will be fully dealt with in my final report at present being prepared. The Genus Dermacentor, as well as the Ixodus have many hosts and it is a peculiar circumstance, that men like Mr. Peardon, and others who saw the ticks on the cattle last fall, have not been able to find even the larval form this spring. It appears to me that the cattle are most likely infected in the fall of the year. A further interesting feature bearing on this matter is the fact that the eggs ovi-posited this spring by the Dermacentor Ret. Fab, I obtained at Mr. Peardon's have not yet hatched out—of course the female may not have been impregnated. The disease is much more extensive in the State of Washington, than heretofore recorded.

Respectfully submitted,

THOS. BOWHILL, F.R.C.V.S., F.R.P.S.

The Veterinary Director General,
Ottawa.

VANCOUVER, B.C., March 31, 1909.

SIR,—I have the honour herewith to forward for your information my third report on the investigations I have undertaken with the disease amongst cattle in this province known as Red Water.

The data, etc., dealing with the infected areas, pathology, parasites, etc., have been considered in my previous reports, while the parasites, etc., observed in other animals in the infected areas are at present dealt with.

I have also included some observations regarding flies, an equine disease and hog cholera.

The most important results are those of the experimental inoculations embodied in the accompanying charts. The conclusion based on the result of my investigation, is that inoculation of young stock in the infected areas is the best means that can be adopted for the eradication of this scourge on infected farms, as the loss is at present so great that many contemplate disposing of their dairy stock.

In carrying out these investigations, I have worked at a great disadvantage, owing to local conditions, difficulty in procuring fully fed ticks, etc. Mr. W. Kinninmonth, caretaker at the station, has done his work to my entire satisfaction and assisted in many directions.

I have the honour to be,
Sir,
Your obedient servant,

THOS. BOWHILL, F.R.C.V.S., F.R.P.S.

The Veterinary Director General,
Ottawa.

LIST OF ILLUSTRATIONS.

Fig. 1. The Phillips cow.
" 2. The Taylor cow.
" 3. Parasites in squirrel's blood, Mount Lehman.
" 4. Parasites in deer's blood, Langley.
" 5. Bladder of the Taylor cow, showing fibro-papillomatous growths and petechial spots on the mucosa.
" 6. Section of fibro-papillomatous nodule x 50.
" 7. Section of fibro-papillomatous nodule showing zooloca of cocci x 800.
" 8. Parasites in blood of heifer No. 1.
" 9. " " heifer No. 2.
" 10. " " heifer No. 3.
" 11. " " Phillip's bull.
" 12. " " heifer No. 3.
" 13. " " heifer No. 1.
" 14. " " heifer No. 3.
" 15. " " Vancouver Island cow.
" 16. " " the Taylor cow.
" 17. Blood of the Inglis cow, showing basophilic granules.
" 18. Parasites in the blood of the Phillip's bull.
" 19. " " the Taylor cow.
" 20. Parasites in blood of cow dead from acute piroplasmosis x 1,200.
" 21. Dermacentor recticulatus, Fab, female ovipositing.
" 22. Ibid, enlarged.
" 23. Melophagus taken off deer at Langley.
" 24. Wings of deer melophagus.
" 25. Wings of Mus. domestica A., and Stomoxys calcitrans B.
" 26. Mast leucocyte in blood of horse, Peardonville.
" 27. Mast leucocyte in blood of horse, Cape Colony x 1200.
" 28. Parasites in blood of horse, Vancouver.
" 29. Trypanoplasma in blood of Taylor's cow.
" 30. Trypanosome from rat's blood, Vancouver.
" 31. " squirrel's blood, Mount Lehman.
" 32. " " "

Hog Cholera.

Fig. 33. Mucosa of caecum showing 'Tricocephalus crenatus.'
" 34. Mucosa of the ileum showing numerous small typical ulcers.
" 35. Mesenteric lymph gland showing a double infection Tuberculosis A, Hydatid B.
" 36. Showing trypanosomes from the rat and squirrel also trypanoplasma from Taylor's cow.
" 37. Composite picture of parasites observed in blood smears prepared from cases of natural and inoculated infection.
" 38. Parasites in chipmunk's blood, Peardonville.
" 39. " squirrel's blood, Mount Lehman.
" 40. Flagellate in the Taylor cow used for inoculating heifer No. 3.
" 41. Gamette in blood of heifer No. 3.

The magnification is 1,000 diameters in all the blood smear specimens with the exception of figs. 20, 27 and 28 which are magnified 1,200 diameters. The coloured plates were drawn by Mr. Judge.

RED-WATER INVESTIGATIONS.—THIRD REPORT.

The results embodied in my two previous reports, as well as in an interim report, acquainting you with the results of the trip, which I made in the Red Water areas of British Columbia and in the State of Washington, U.S.A., especially along the International Boundary, have embodied the study of the hæmocytozoa and the post-mortem lesions of the Taylor cow, at Mount Lehman, also the fact that the role of the tick or other intermediary host remained to be determined.

About the end of last May I visited the Mount Lehman district and purchased from Mr. Phillips a cow in an advanced stage of the disease. I also obtained a cow from Mr. Taylor, which was not as emaciated as the one I obtained from Mr. Phillips. The latter sent his cow down immediately to the Station, but Mr. Taylor's was not delivered until the 12th of August, when it succumbed a few days after arrival from acute Red Water, associated with cardiac complications, no doubt intensified by the road journey from New Westminster,—see Chart D accompanying this report.

At the request of Mr. Ingils, I visited his farm, about 7 miles east of New Westminster, on the left bank of the Fraser River and about one mile from the Yale road. I found a typical case of Red Water in the early stages; the cow was in good condition. Photomicrograph No. 17, shows the condition of the erythrocytes and will be referred to later. Mr. Brown, who lives on the Yale road, a few miles from Mr. Inglis, has lost several of his cows from the same disease.

I interviewed Mr. Reynolds of Langley Prairie at New Westminster; he informed me that his farm was free from Red Water until he unfortunately lent his bull to a neighbour. About one month after it was returned he noticed that it was suffering from Red Water and at the present time six of his cows are also suffering from the same disease. Dr. Tolmie and Dr. Richards inform me that they have observed the disease on Vancouver Island, and the former also informs me that he lost a fine bull, imported from the State of Washington, U.S.A., some time ago. I received two yearling heifers from Vancouver Island for experimental purposes; the accompanying charts A and B show that there was something radically wrong with these animals on arrival at the Station. These heifers were inoculated with blood taken from Mr. Phillip's cow. The re-actions, etc., are fully dealt with further on, but nevertheless I considered it necessary to visit the farm from which they came. Dr. Richards very kindly drove me out to the farm and I obtained some blood smears from two cows. On my return to Vancouver I examined these smears, when I was astonished to find some of the erythrocytes in both of the animals exhibiting parasites very similar to some of those found in the Fraser river outbreaks.

In view of these facts I asked Dr. Tolmie for two heifers from a district beyond the coastal belt; he sent me two yearling heifers from Kamloops. At present one of them is inoculated with blood from Mr. Taylor's cow, (see chart B), the other being held as a control, (see chart II).

On the 13th of September, 1908 I visited Mr. Reynold's farm at Langley Prairie; there I saw 3 cases of typical Red Water in various stages, due, as he claimed, to the lending of his bull, as mentioned heretofore. The evidence that the bull brought the disease to the farm is fairly conclusive as it did not exist previous to the lending of the bull. It is, however, necessary to take into consideration the fact that this disease may lie latent for some time in the system without showing any clinical symptoms or systematic changes. It is possible that some animals may harbour the parasites and still show no untoward changes until the system becomes depleted by either associated disease or parturient changes. On the other hand, ticks may have been brought by deer or other animals from infected areas. This disease appears most frequently after parturition. I had an interview with Mr. Wark, whose farm is about 3 miles from Mr. Reynold's place; he has lost a lot of cattle from this

disease and figures his loss during the last few years at about $1,000. He considers it risky to buy a cow, as the animal may not show any signs of the disease until about a month after purchase: such cases he states are often sold after the primary attack has subsided and by this means, the disease is very probably carried from one place to the other.

Blood smears were prepared from a young deer a few minutes after it was shot on Mr. Reynold's farm. On my return to Vancouver the blood smears were examined, when I observed the presence of a few hæmocytozoa, bearing a great resemblance to those observed in Red Water cattle. I also obtained some melophagi off this deer but whether they are the 'lipoptena cervi' already described as occurring on red deer or a species peculiar to this coast, I am not prepared to state. On the 12th of November, 1908, I again visited the Mount Lehman district in search of ticks. I shot a squirrel close to Mr. White's farm and obtained several partially fed adult female ticks off its head,, close to the ears and eyes, some of which were forwarded to the Department at Ottawa.

I examined Mr. White's cow and Mr. Phillip's bull, both of which were suffering from typical Red Water; the cow had been ailing for some time and died shortly after my visit. The bull was ailing all summer and was treated with quinine and other tonics but finally had to be destroyed on February 2nd, 1909, vide chart K.

I addressed a meeting of farmers at the local hall and on inviting a discussion obtained some very valuable local information regarding this disease. It is evident from the information elicited that the diseased or infected localities are more extensive than hitherto admitted.

I visited Mr. Ball's place next day as it was here that I obtained the 'Dermacentor reticulatus' last year. Mr. Ball informs me that he had never had Red Water on his farm until last year and had never observed any ticks on his cattle previous to the visit Dr. Tolmie and I made last year. I found ticks on the same ox, from which I got them last year and also on a 12 year old cow; both of these animals were suffering from Red Water. Only one fully fed female tick was taken off the cow. This tick has oviposited a large number of eggs and I await results. Several nymphs obtained at the same time hatched after I got home and three females were placed on Heifer No. 1 vide chart E. There were numerous nymphs and partially fed adults attached to both animals. I asked Mr. Ball to remove any fully fed ticks for me, but unfortunately during his absence, some one on the farm dressed the cow with paraffin, the result being that all ticks were destroyed. This was a very unfortunate occurrence, as both the animals were infected, the cow not in calf and no more cattle on the farm. I have never found any ticks on the hairless portions of any of the animals that I have examined; they seem to prefer the upper portions of the neck and along the sides of the back bone, where they cause a considerable irritation, very similar to what occurs on cattle in the Coastal area of Cape Colony, where the disease is sometimes described as tick farcy and by the natives it is called "Sitwaye". No larval forms were observed but remains of the nymphal ecdysis; it is therefore evident that this tick undergoes one moult on cattle. Some unfed female adults obtained from the above mentioned cattle were placed on a hare's ear, but they would not attach themselves.

During this trip I visited Mr. Peardon's farm, but found no ticks. The cattle that the ticks were present on in 1907 have since died of Red Water.

At Mr. Barn's farm, about a mile from Mr. Peardon's place and a little higher up the side of the ridge, I examined a horse with clinical symptoms bearing a great resemblance to a disease commonly described as biliary fever in South Africa; this case is fully dealt with in another portion of this report.

On the 15th of December, 1908, I again visited the above mentioned district, when I found that Mr. Ball's cow was becoming very anaemic. I took a number of blood smears from her and tested the blood, finding a haemoglobin index of 70. The blood smears were examined the same evening and parasites were present similar to what I

have observed in other cases. I visited Mr. Fry's farm where I found evidence of tick invasion amongst his cattle. Mr. Fry informed me that he had observed ticks on his cattle for some time past but that he had no Red-water amongst his stock. I called at Mr. Peardon's where I obtained 3 squirrels but only one of them harboured a single tick. On a farm adjoining Mr. Bayne's place, I came across an acute case of Red Water in a cow, also evidence of ticks and a history of same. In this case a well marked icterus was in evidence, temperature 104° Fahr., blood thin and brick coloured, haemoglobin test 40, urine well marked haemoglobinuria. This cow has since calved but is still suffering from the disease. Mr. Roberts, who is a neighbouring farmer and from whom this cow was purchased a few months previous to the date of examination, told me that he had no sickness on his farm. I also saw a horse suffering from a form of biliary fever with a history of recent tick infestation. This case will also be dealt with in another portion of this report.

PROBABLE SOURCE OF INFECTION.

In some of the infected areas in this province the idea prevails that this disease is caused by the cattle eating ferns in the hay. In contradiction of this supposed dietetic cause Russel, in his Rothamstead experiments dealing with fern hay, has recently found 'that while no careful comparison with straw seems to have been made, there is a firmly general opinion that bracken is nearly as useful as straw as far as the animals are concerned, although a competent observer has noted that the animals are not so good, indicating that they do not do quite so well on bracken as on straw.' The above extract is sufficient evidence to dispose of the fern theory regarding the cause of this disease, and furthermore, if bracken caused this disease many portions of Scotland and Ireland would simply be hotbeds of Red Water. I am perfectly satisfied that ticks are introduced into byres, either by bracken or hay, as I observed that a large number were brought into the box stalls at an agricultural show at Port Elizabeth, Cape Colony, by means of the slough reeds which were used for bedding. It is stated that in Norway the infecting tick (*Ixodes hexagonus*) is found on trees with flat leaves; on the contrary it is never found on trees with linear foliage (pines and firs). This may also apply to the conditions in this province, as the disease appears to be most prevalent where the alder and birch trees predominate. In South America, Lignieres does not consider infection by mosquitoes impossible but it is of rare occurrence. During the summer months the mosquitoes are a frightful scourge along the Fraser valley, and it is not unreasonable to presume that they may act as carriers of this disease from a previously tick infected animal to others. This question can only be decided by a series of experiments.

I have only obtained direct evidence of the presence of ticks on infected cattle in the neighbourhood of Peardonville. I regret that I have been unable to obtain more definite information on this point. As already mentioned in my interim report, I have, however, been able to learn through the kindness of Professor Neumann, that the ticks found on a cow, since dead of Red Water at Peardonville, are the Dermacentor reticulatus, Fab. Profesor Neumann also informs me that the tick found on the squirrel (*Scrurus Hudsonius bafleyi*) is probably an undescribed species of Ixodes.

I am indebted to Mr. F. Kermode, Curator of the Provincial Museum, Victoria, B.C., for information regarding the various species of squirrel found in these areas.

Photomichographs No. 21-22, show the female tick obtained at Peardonville ovipositing.

BLOOD CHANGES.

The basophilic granulations were very numerous in Mr. Inglis' cows' blood. *Vide* photomicrograph No. 17.

According to Plehn, in human malaria, basophile or primitive granules are never wanting during the latent periods. The same authority also notes that the appearance of a large number of mononuclear leucocytes announces the continuance of the latent infection.

In reference to chart C., Cow No. 1, natural infection, accompanying this report, shows that on the tenth day of observation a large number of mononuclear leucocytes were in evidence. I have noted this change in other cases of natural infection, as well as in the experimental stock.

Lignieres refers to the basophilic granulations in South American cattle, as 'Globules geants pointilles'—red cells 2—3 times the normal size, containing granules of variable dimensions. Lignieres produced these changes by repeated bleeding and noted that they were still present for some time after the last bleeding operation.

In human malaria the basophiles have been described as a sign of stroma degeneration. Poly-chromasia is also stated to indicate degeneration or regeneration of red cells or both. This feature has been especially well marked in nearly all the blood films examined from infected cattle.

According to Plehn, in human malaria the first or primary period of latency extends from the infection to the appearance of fever, while the period extending between the after-attacks can be described as intermediate periods of latency; this period may extend for months. I think the above is a fairly accurate description of the changes in bovine piroplasmosis in this province. Reference to the accompanying charts, as well as the fact that the fatal termination usually results after several attacks and final association with secondary or terminal complications, complete a picture bearing a striking resemblance, clinically, to some of the severer forms of tropical human malaria.

The icterus observed in animals is usually ascribed to two causes: 1st, retention of bile; 2nd, haemolysis. The peculiar icteric condition observed among Red Water infected cattle in this province, is probably due entirely to haemolysis. The appearance of the above mentioned granular basophilia in many cases supports this theory. Hayem considers that the yellowish colourization of the skin in haemoglomuria is a special pigmentation and not that of true jaundice,—and as far as is known in all cases when haemolysis occurs during life, the haemoglobin liberated does not give rise to bilirubin.

Red blood cells being impermeable, no changes take place in the number of inorganic molecules, but by endosmosis H_2O passes into them, causing them to swell up, and if decrease in the plasma is sufficient, eventually, to burst and to extrude their haemoglobin.

Hyaemolysis is probably due to three factors:—

1. Injury to the stroma of the red cells by parasites.
2. Presence of a haemolysin.
3. Accessory factors.

Sulphates decrease resistance of cells to haemolysis, while chlorides, on the other hand, increase it.

It is interesting to note that Marchiafava and Bignami have also observed more or less anaemia in cases of larval malarial fever associated with haemolytic jaundice, —some possible change in the blood serum disuniting its isotonicity is present, rendering uninfected red cells immensely vulnerable.

Supposing such changes occur in the Red Water in this province, it will to some extent account for the presence of haemoglobinuria in a marked form, with a low thermal curve and only a few parasites in evidence in specimens prepared from the peripheral circulation.

The condition of the blood plaques or platlets was very interesting in some of the slides examined. They appeared in racemose masses at certain portions of the smear but in the well marked clinical cases did not agglutinate in masses, and in

some cases appeared to be present in increased numbers. The direct estimation of the numbers present was not attempted as it was an impossibility, with the assistance at my disposal, to carry out the technique necessary for an observation of this nature. Haemoglobinaemia was observed in Heifers 1 and 2, Charts A and B, by placing a small quantity of blood in a cold place for 24 hours, the separated serum being coloured a ruby red. The leucocytic count was not carried out regularly and calls for no special mention, leucopenia being invariably observed, except when specially noted on the accompanying charts.

PARASITES.

Failure to demonstrate piroplasmata does not by any means exclude piroplasma infection, such negative evidence thus depends for a final diagnosis, on its co-relation with other clinical signs and symptoms. The many relapses or attacks that occur in this form of Red Water under consideration are, as already mentioned undobtedly due to some latent infection. According to Schaudin, in human malaria, female gamettes in the internal organs are accountable for relapses in that disease. It is well known that the piroplasma remain for many years in the so-called immune stock. According to Von Wasselewskie—'das Plasmodium praecox nach dem acutem vermehrungsstadium sehr sparlich in Blut zu finden ist, so eignet sich das Blut chronisch kranke Thiere nicht zu Demonstrationswecken.' The above observation practically coincides with the chronic form of piroplasma infection seen in this province.

The form of this disease principally observed here is a chronic, mild form lasting for months, affecting chiefly the kidneys, bladder and heart, *vide* photograph, Fig. 5, of bladder from Mr. Taylor's cow, Mount Lehman. Another form, extremely mild and scarcely detected clinically, undoubtedly occurs, and with the above mentioned form is observed in swampy ground.

The form of the parasite varies greatly in the peripheral blood—coccus-like bodies of varying dimensions, with a more or less irregular outline, the periphery staining darker than the middle portion, a slight portion of the margin exhibiting chromatin staining; pear-shaped bodies and various form of flagellates, also some large ovoid forms; in the peripheral blood, some forms bearing a great resemblance to some of the forms of the human malarial parasite were observed. I have observed a coccus-like form in some of the supposed healthy cattle in the infected areas. Lignieres states that the parasite found in France exhibited a marked difference to those observed in South America.

In smears prepared from the squirrel's blood in the infected areas, I have observed typical trypanosomes, but whether these parasites are similar to those found in the Indian squirrel (*Funambulus palmarum*) or a distinct species peculiar to British Columbia, I am unable to state. Photomicrographs No. 31 and 32, show the trypanosome in the squirrel's blood. Photomicrograph No. 38, depicts the parasite observed in a chipmunk's blood; this animal was obtained at Peardonville.

TICK EXPERIMENTS.

Ticks were placed on the ear of Hare No. 1 and on the body of Heifer No. 1. The hare was placed in a box, which was stood over a tub of water,—and two unfed adult female ticks hatched at the laboratory from nymphs obtained from Mr. Bell's cow, near Peardonville, were placed at the base of the ear. At first the ticks appeared as if they would attach themselves, but next morning, after a long search, both the ticks were recovered in a little hay left in the box.

Three unfed adult female ticks were placed on Heifer No. 1 at the quarantine station, but also failed to attach themselves. No doubt, the tick irritation caused the heifer to rub them off, as the pajama was found torn to pieces in the morning. An experiment like this requires a large number of ticks which I unfortunately could

not obtain. Photograph No. 21 and 22 shows a female Dermacentor reticulatus, ovipositing. I have one tick at present which has oviposited a large number of eggs and I trust I will be able to hatch out some larvæ. It was placed in moss and filter paper in the bottom of the Petridish, moistened with water at regular intervals, and kept at a temperature of 29°C; ovipositing commencing on January 28, 1909.

EXPERIMENTAL INOCULATIONS.

Animals.—Two yearling heifers received from Vancouver Island on May 1, 1908, were kept under close observation for 24 days previous to innoculation, *vide* Charts A and B, accompanying this report. On May 27, 1908, they were inoculated as follows: 5 ccm. of blood (citrated) taken from Cow No. 1 (Phillips), *vide* Chart C, was injected subcutaneously behind the shoulder of both heifers. Heifer No. 2 received a further inoculation of 15 ccm., citrated blood, also from Cow No. 1, on June 8, 1908, subcutaneously behind the shoulder. On the same day as the first inoculation was completed, a male guinea pig No. 1 was inoculated intraperitoneally with 2 ccm. of the same blood as heifers No. 1 and 2. This guinea pig was inoculated to serve as a control against a possible Pasteurella or other septicaemic infection and also to observe possible blood changes, as well as the appearance of any Trypanosome infection.

Heifer No. 2 received a second inoculation in order to determine the effect of two inoculations; if the two inoculations were not fatal, the subject could receive a further inoculation from a virulent case, and if it then survived it could be used for the purpose of providing immunity by blood inoculation. The various changes in the blood counts, the presence of haemocytozoa, etc., are fully enumerated in the accompanying charts E and F.

You will observe that the fever curve in heifer No. 2, chart F, attained its maximum on the 18th day after the first inoculation and on the 6th day after the second inoculation. In heifer No. 1, chart E, the fever curve reached 104·3 on the 11th day and 103·3 on the 83rd day after inoculation. The blood of both of these animals was examined as often as possible during a period extending from 198 to 300 days, *vide* charts E and F. Blood counts were also made at stated periods, the results being embodied in the accompanying charts.

The guinea pig inoculated at the same time as heifers No. 1 and 2, with blood from the same cow (Phillips) remains healthy. On July 6, 1908, a half-grown hare was inoculated with 2 ccm. of blood, drawn into sterile normal saline solution from the ear of heifer No. 2, *vide* chart I; the injection was made into the posterior auricularis vein (ramus lateralis posterior of the vena auricularis posterior). In this animal a few bodies resembling parasites were observed in the blood on the 5th day after inoculation, and again on the 20th day *vide* chart I. The animal was found with a broken leg on the 6th day after inoculation, the fractured limb was set and in a few weeks was completely united. The guinea pig and the hare, as experimental animals were used as controls against a possible septicaemic infection. I have, however, not lost sight of the fact that these animals may harbour endocorpuscular parasites independent of the inoculated bovine parasites.

On August 17, 1908, cow No. 2, received from Mr. Taylor, of Mount Lehman, was bled, 100 ccm. being taken from the right jugular vein. Heifer No. 3, chart G, received from Kamloops was cast (a range animal), blood smears taken from the ear vein and 60 ccm. of defibrinated blood taken from cow No. 2 was injected subcutaneously behind the shoulder.

Guinea pig No. 2, chart J, received 2 ccm. of defibrinated blood from the same source as heifer No. 3, intraperitoneally. Nothing was observed in the blood of this animal, although on the 11th day after inoculation the temperature rose to 103, *vide* chart J, and it is noteworthy that a similar rise took place in heifer No. 3, inoculated

at the same time, *vide* chart G. At this stage a few parasites were noticed in the blood of heifer No. 3. Guinea pig No. 2 was found dead on the morning of September 4, 18 days after inoculation. The autopsy revealed slight post-mortem staining so that death had taken place some time before the examination was made. The liver was congested, the peritoneal surfaces hyperaemic, while in the lungs marked congestion was evident and on the sides of the thorax a mass of coagulated blood was present. It appears from evidence obtained later, that an emigrant's dog broke into the cage and if it did not kill the guinea pig at once, it evidently died from the effects of the contusion on the sides of the thorax. The lesions observed at the autopsy were not in keeping with the animal's condition on the previous day.

In heifer No. 3, chart G, examination of the blood smears taken previous to the inoculation showed no indication of either haemocytozoa or corpuscular changes. On the 11th day after inoculation a few parasites were observed. The temperature reached 103° Fahr. on that day and on the 96th day it reached 104° Fahr., but up to date no special rise has been observed. It being necessary to cast this animal every time that she was bled, the blood examinations were consequently limited in number. Heifer No. 2 is at present on Mr. Phillip's farm, Mount Lehman, as Red Water has been prevalent there for some time. The accompanying chart I gives the temperature of this animal on the farm from December 12, 1908, to January 31, 1909. It will be observed that higher temperatures are recorded, especially soon after arrival at the farm, than were observed during the period the heifer was at the Vancouver Quarantine Station.

She has been bred and Mr. Phillips reports that she is at present in good order and has shown no signs of any Red Water infection. The chart for February and March is not included, as the variation recorded is so slight as to be of no practical importance. Reference to charts E and F shows that a light variation also occurred with heifers 1 and 2 during the same period.

Guinea pigs resist, according to Nicolle and Adil-Bey, an injection of normal cattle blood in quantities up to 5 ccm., while blood from cattle suffering from piroplasmosis is toxic for guinea pigs, 1 ccm. killing those animals rapidly when injected intraperitoneally. Cattle, rabbits, dogs and guinea pigs are also stated to resist infection with equine malaria in South Africa.

PROPHYLACTIC MEASURES.

Medicinal treatment is only palliative. I, therefore, suggest inoculating the young stock on infected farms with blood from a recovered case (either natural infection or inoculated recovered calves), and the use of some non-poisonous dressing during the tick, fly, and mosquito season. Where no disease at present exists, I would more especially suggest the application of the dressing.

Finally, I believe that some legislative measure to control the sale of infected cases during the quiescent period of the malady should be instituted, thereby limiting the spread of the disease.

FLIES.

Many species of blood-sucking flies are prevalent during the summer months, in the Red Water areas. Near Pearkonville, also in Vancouver, I obtained some 'Stomoxys calcitrans,' vide photo No. 25, I also found the 'Haemotobia serrata' or 'horn fly' very prevalent. I have observed on deer large numbers of 'Melophagi' with bidentate claws, small eyes and extremely minute wings, with one large spot and almost invisible veins; whether this is the 'Lipoptena cervi' already mentioned as occurring on 'red deer' or another species peculiar to this country, I am unable to say, vide Photos Figs. 23, 24. There are many other large blood-sucking flies; one

form occurs in cattle, which is commonly known as the 'deer fly' and is probably the 'Hamatopota pluvialis.' The wings are grey with brown coloured spots and the body is also grey with brownish cross stripes.

EQUINE DISEASE.

In the month of April 1908, whilst attending to an outbreak of infectious pneumonia, in a stud of draught horses in this city, I had occasion to observe some peculiar icteric lesions and pigmentary petechial spots on the mucosa of the eye, especially over the membrana nictitans in a severe case of pneumonia dextra multiplex, with diffuse hepatization and extreme anaemia. The icteric lesions appeared about the 15th. day after the onset of the disease and occurred only in one animal. The similarity of these lesions, to what I have observed in some forms of equine biliary fever in South Africa, were very marked. Blood smears were therefore prepared, the blood was observed to be watery, very light coloured and coagulated very slowly. Microscopical examination revealed the presence of a few intra and extra corpuscular bodies, which morphologically resemble some of the forms observed in cattle suffering from Red Water in this province. The accompanying chart M, shows the temperature curve of this animal during the last 11 days that it was under observation. I found the next case of this nature at Mr. Bayne's farm near Peardonville, close to the American line, on the 13th. of November 1908. This animal exhibited asthenia, the mucosae of the eyes were blanched and indistinct petechial spots were present on the membrana nictitans. Blood smears were prepared, the blood was watery, light coloured and coagulated slowly. On examination a few intra and extra corpuscular bodies were observed similar to those observed in the above mentioned case in Vancouver. A tonic was prescribed and when the animal was seen again on December 15th., 1908, marked improvement had taken place. On the adjoining farm I found a similar case with a distinct history of previous tick infestation. The owner stated that a neighbour and himself had removed a lot of large fully fed ticks off this horse a few weeks previous to my visit. They were attached in the submaxillary region. The blood was watery and light coloured with a haemoglobin index of 70, the visible mucosae were lemon coloured and well marked petechial spots were present on the membrana nictitans. The horse was recumbent and raised with difficulty, it was suffering from constipation, which was relieved but it did not recover. The owner informed me about another case that had been observed voiding red urine, whilst at work on the road. Blood smears were prepared and on examination intra and extra corpuscular bodies were observed morphologically indistinguishable from those found in the previous cases. In the beginning of 1909, I had occasion to examine a horse about 18 years old suffering from necrosis of the fatty frog with a partial separation of the hoof. This animal had been very anaemic and difficult to keep in condition for some months previous to the advent of the foot lesion. Observing symptoms of urinary derangement, I passed the catheter, when I was astonished to find a well marked haemoglobinuria was present. Blood smears were prepared and on examination intra and extra corpuscular bodies were observed indistinguishable from those above described in the other cases. This case presented a haemoglobin index of 50. I consider that the appearance of the haemoglobinuria and blood changes in this and the first case observed probably a recrudesence of a previous infection. Similar conditions were observed in Africa, and recorded by Koch and myself, whilst working with horse sickness, a dual infection taking place, the latent biliary fever organism suddenly becoming active in a depleted system. I also had occasion to observe in all of these cases a peculiar type of mast leucocyte, which I have never observed in any animal but the horse, and only in biliary fever in Africa, previous to the occurrence of the above mentioned cases, vide photomicrographs Nos. 26, 27, accompanying this report.

The above observations are interesting and I think the inoculation of an old horse with blood from a typical bovine case would assist in determining the nature of this disease. It is well known that the equine and bovine varieties differ in South Africa and possibly a difference also exists in this Province. Of course the South African form is not transmissible by direct inoculation, vide Theiler and Koch's experiments in Journal of Hygiene.

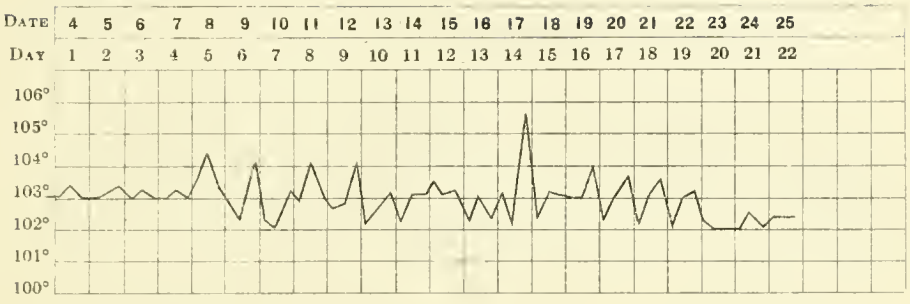
HOG CHOLERA.

Dr. Tolmie has forwarded me numerous specimens from recent outbreaks in this Province. These have been the subject of special reports. In one outbreak, which I investigated near New Westminster, I found in the caecum of several of the infected animals, numerous worms attached to the mucosa, 'Tricocephalus crenatus' vide photo Fig. 33. I must draw attention to the shocking condition of the Chinese piggeries. In the neighbourhood of the Hastings Park, the filth is beyond description.

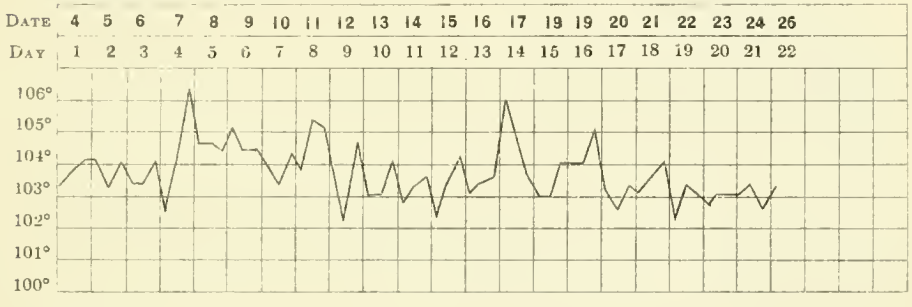
Respectfully submitted,

THOS. BOWHILL, F.R.C.V.S., F.R.P.S.

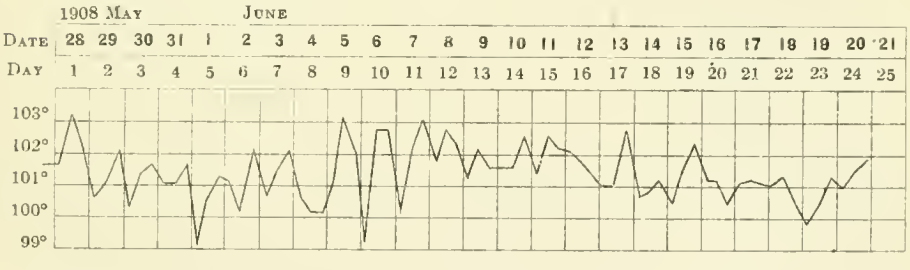
RED WATER
CHART A
Vancouver Island Heifers
Heifer I
1908 MAY



RED WATER
CHART B
Vancouver Island Heifers
Heifer II
1908 MAY



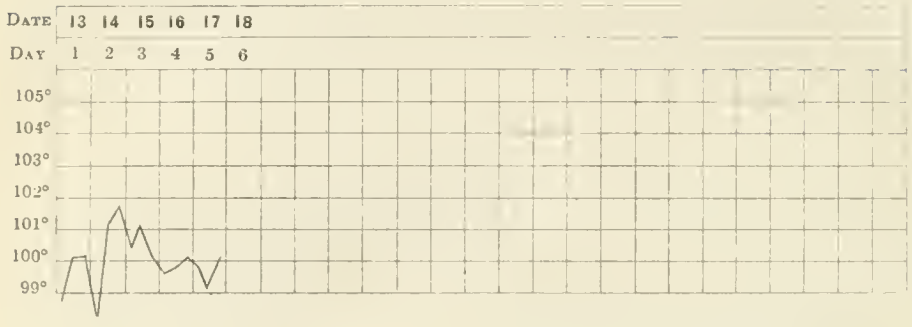
RED WATER
CHART C
Cow I "dry"
Natural infection; 2nd attack, from Mr. Phillips' farm, Mt. Lehman.



The following notes were made from 1st day to 24th day on Chart C.

1 Erythrocytes = 4.200.000.
1 Haemoglobinuria present.
2 Haemoglobinuria present.
3 Blood smears show only a few parasites.
4 Urine normal color.
5 General condition improved.
6 Off feed. Eyes sunken and glassy.
7 Extreme anæmia, blood lepacenic. Adhering to slides with difficulty.
8 Very weak raised with difficulty.
9 Growing weaker, haemoglobinuria again present.
10 Large number of large mononuclear leucocytes in smear.
11 Parasites more plentiful.
12 Strychnine hypodermically. Raised with difficulty.
13 Bled from right jugular vein, 50 c.c.m. withdrawn.
14 Lugols solution hypodermically; got up alone during night.
15 Could not get up.
16 Decubitis persisting. Raised with sling.
17 Decubitis.
18 Decubitis.
19 Growing weaker.
20 Still weaker. Tonics, &c., no use.
21 Growing weaker.
22 Bloody coated faeces passed.
23 Bloody coated faeces passed.
24 Erythrocytes = 3.200.000.
*Found dead on morning of June 20th, 1908.

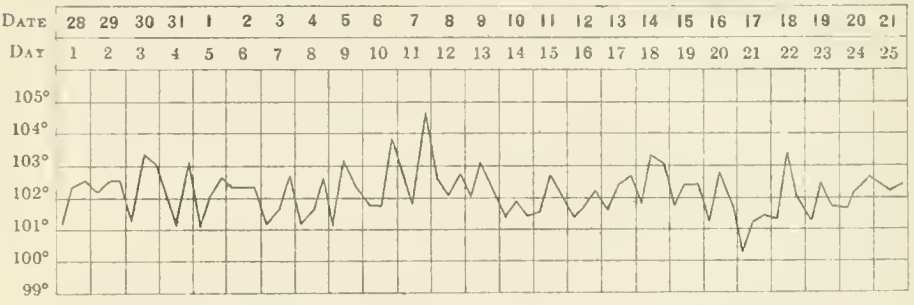
RED WATER
CHART D
Cow II
Natural infection; 3rd. attack from Mr. Taylor's farm, Mt. Lehman.
1908 AUGUST



1 Haemoglobinuria present.
2 do.
3 do.
4 do.
5 100 c.c.m blood drawn from left jugular vein.
Few parasites per smear.
5 Erythrocytes=4,160,000.

*Died morning of August 18th, 1908.
*The journey on foot from New Westminster hastened the animal's death.

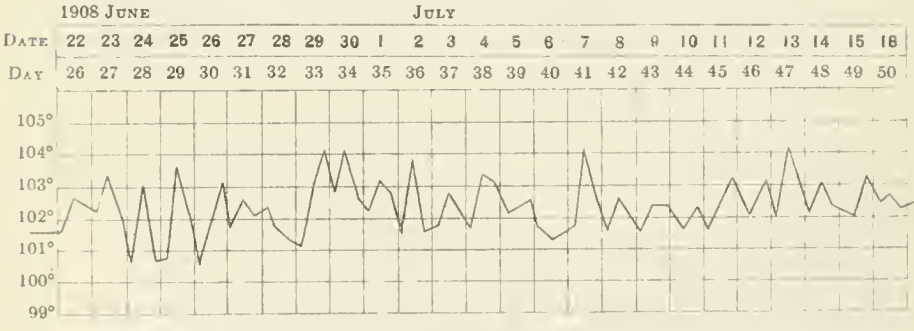
REN WATER
CHART E
No. I yearling heifer from Vancouver Island.
Infecting material,—5 c.c.m. blood (citrated) subcutaneously from Red Water cow No. I, Mt. Lehman, May 27th. 1908.



21 Erythrocytes=6,400,000.
25 A few parasites present.

1 Erythrocytes=7,300,000.
12 Parasites in blood

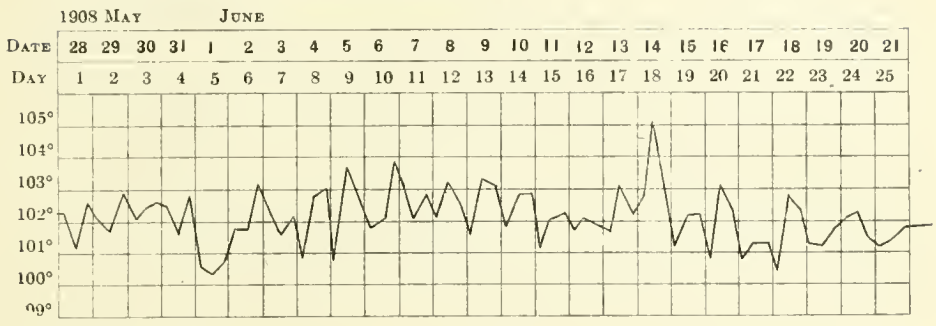
CHART E, Continued



30 Only a few parasites per smear.
36 Parasites more plentiful.

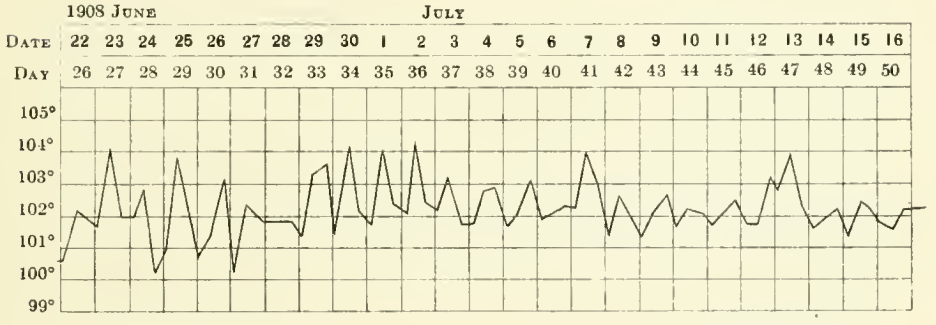
40 Erythrocytes=5,650,000.
44 Diarrhœa.

Red Water
Chart F
No. II yearling heifer from Vancouver Island
Infecting material,—5 c.c.m. blood (citrated) from Mt. Lehmao cow No. I, subcutaneously.



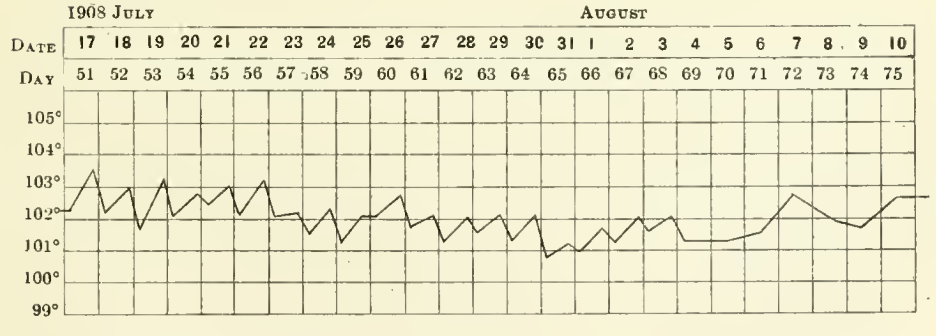
1 Erythrocytes=7,840,00
12 A few parasites on peripheral blood.
13 Received 13 c.c. m. of blood X normal saline subcutaneously from cow No. 3.
18
19
20 } Parasites present in blood. Several per smear.
21
22
23 Parasites decreasiog per smear.
23 Erythrocytes=5,340,000.

Chart F, Continued



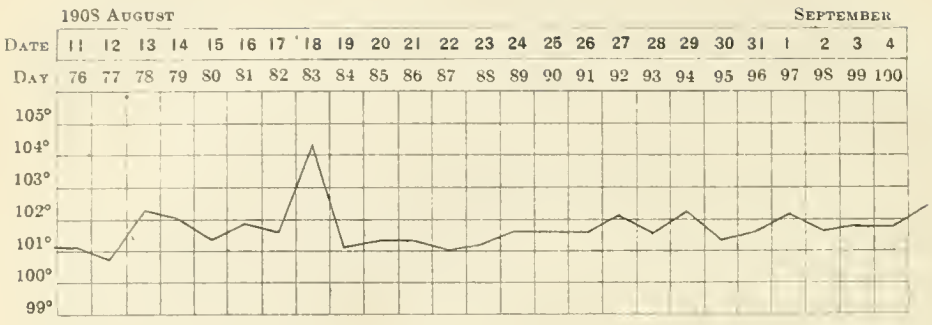
27 A few parasites per smear.
30 A few parasites.
34 Parasites more plentiful
40 Erythrocytes=4,200,000.
41 Parasites present.
43 A few parasites.
44 Diarrhœa.

Chart F, Continued



59 A few parasites per smear.
59 Erythrocytes=7,200,000.
72 A few parasites.

CHART F, Continued



83 Parasites, present.

CHART F, Continued

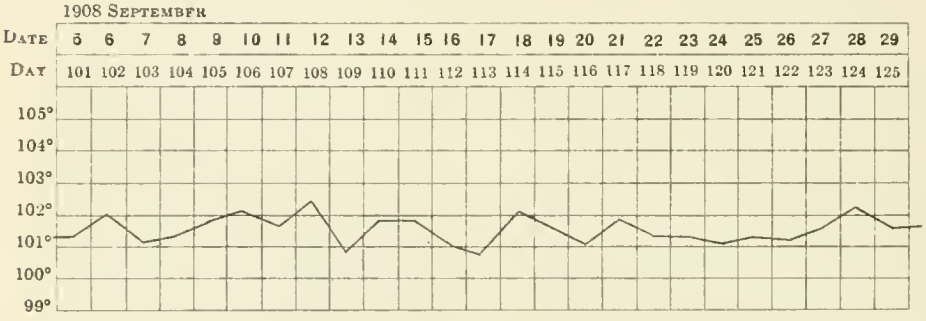
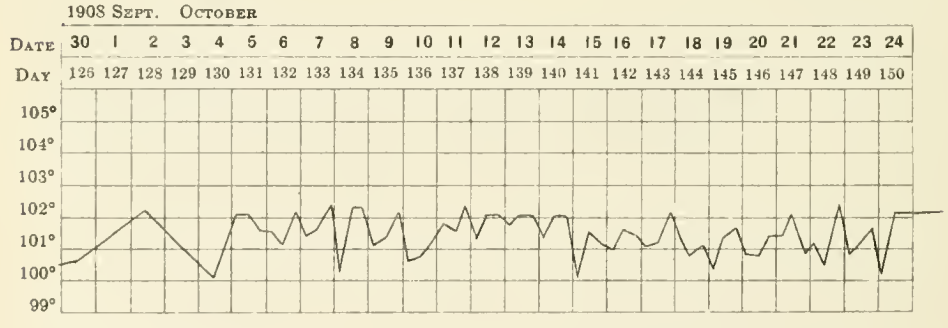


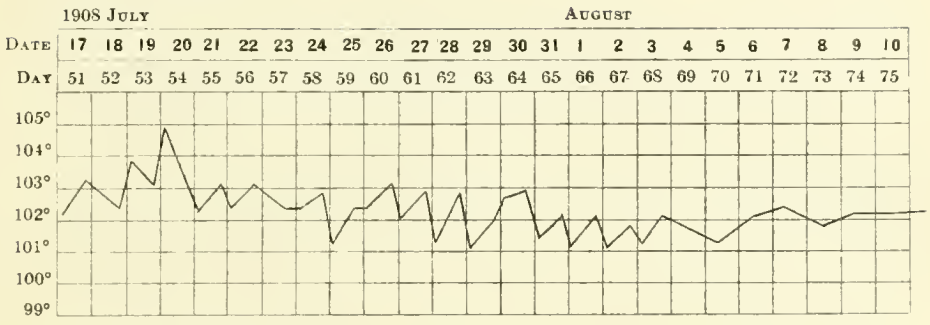
CHART F, Continued



136 Erythrocytes=6,800,000.

139 Yellowness of skin and visible mucosa not so marked.

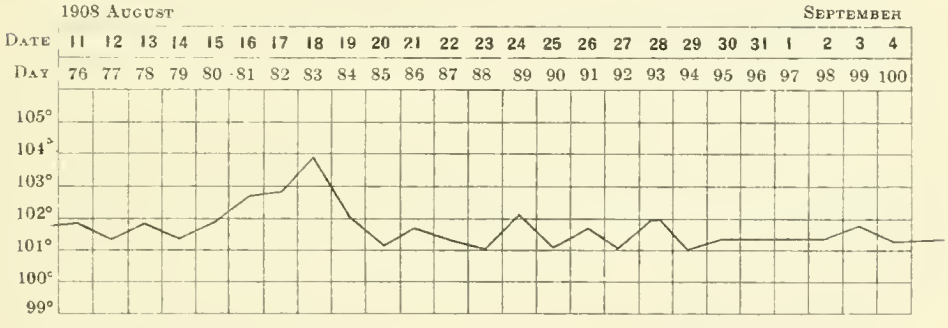
CHART E, Continued



59 A few parasites.
61 Parasites present.

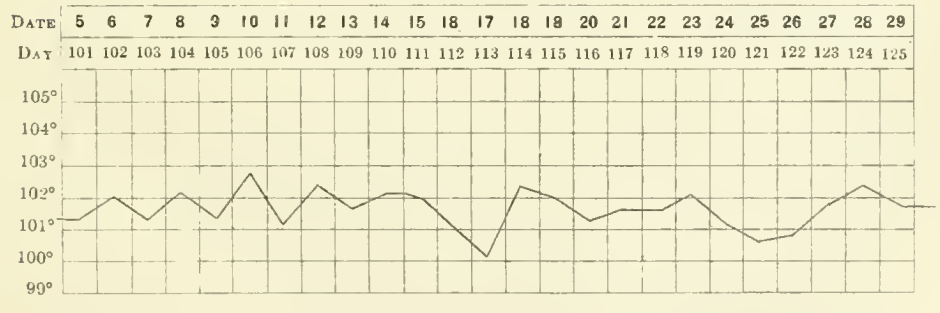
59 Erythrocytes=6,800,000

CHART E, Continued



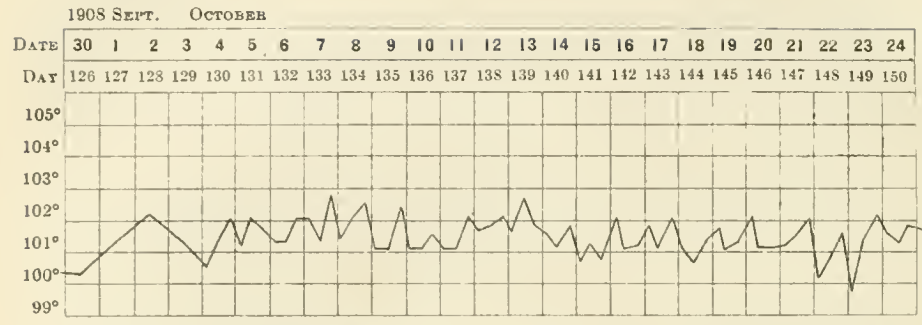
83, 95, 97 } A few parasites per smear.

CHART E, Continued



106, 111, 117 } A few parasites observed

CHART E, Continued

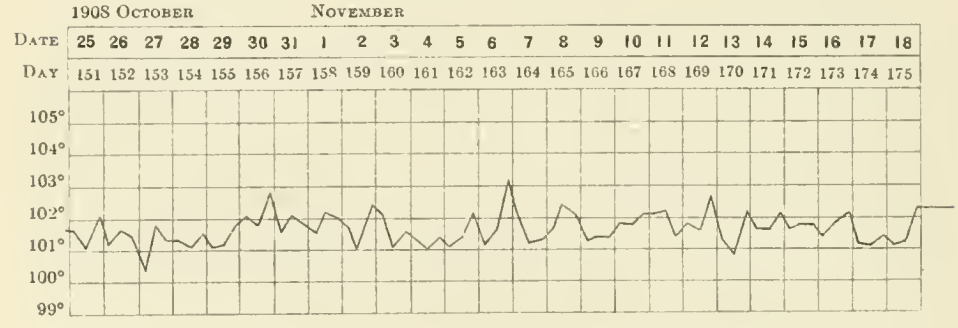


131 Only a very few parasites present, per smear.
134 Parasites, only a few in several smears.
136 Erythrocytes=6,700,000.
139 Parasites still scarce.

Animal continually recumbent. Visible mucosa and skin no longer yellow. Mucosa of eyes exhibits extreme anæmic condition.

147 Parasites still scarce.

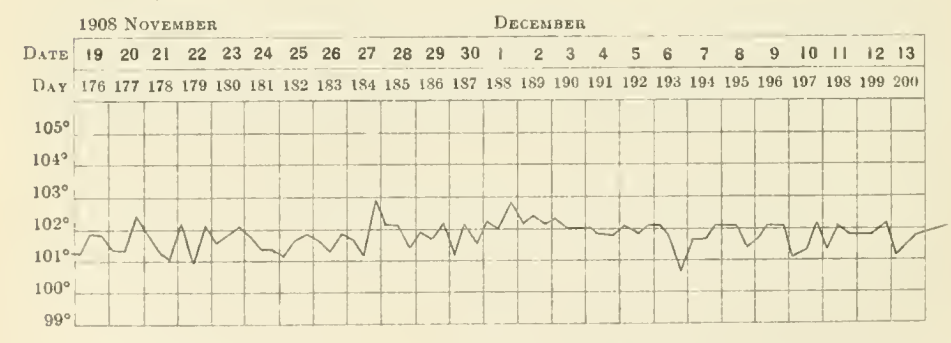
CHART E, Continued



163 Parasites more plentiful.
164 Sick and blowing slightly.

167 Blood coagulated very slowly.
175 A few parasites observed.

CHART E, Continued



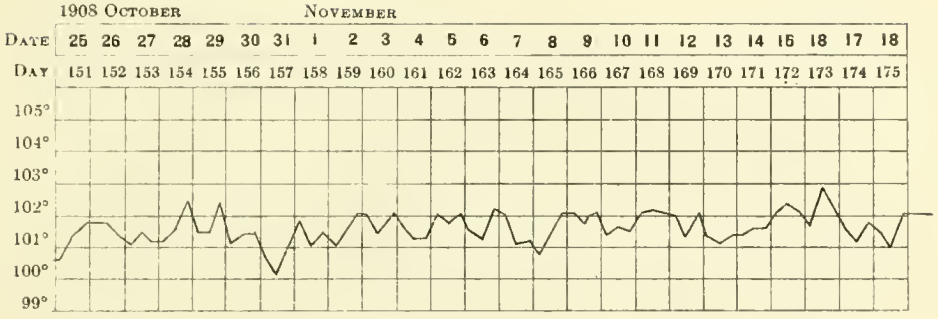
184 Placed 3 unfed adult females ticks on skin. Ticks off and cloth destroyed in the morning.

The temperature up to April 30, 1909, showed practically no variation.

On February 9th, only two parasites appeared in several smears examined.

On March 31, 1909, erythrocytes 6,900,000 H=80.

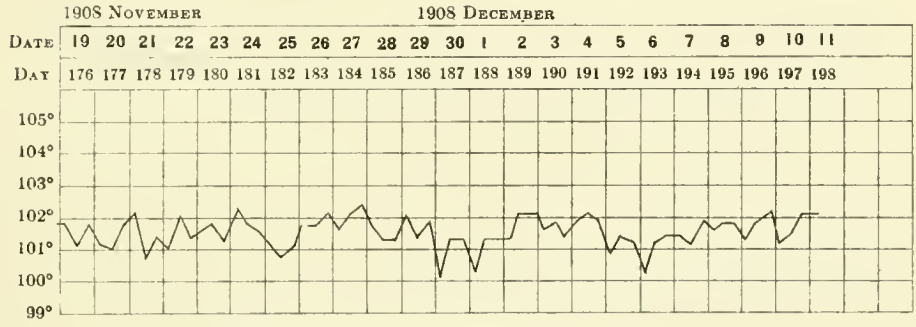
CHART F, Continued



155 Visible mucosa, especially the eye, show indications of an anæmic condition.

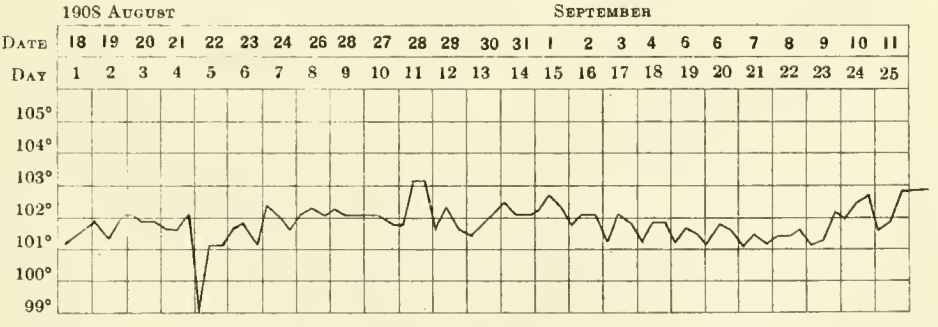
173 A few parasites per smear.

CHART F, Continued



198 Sent to Mr. Phillips' farm, Mount Lehman and bred for continuance of temperature there Vide Chart L.

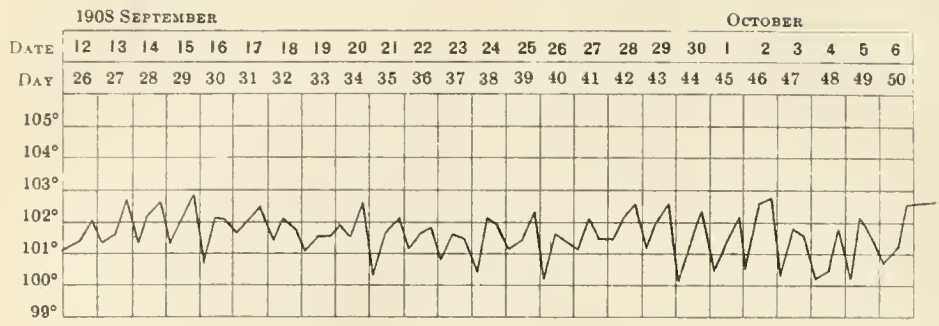
RED WATER
CHART G
No. III. Kamloops heifer
Infecting material,—60 c.c.m. defibrinated blood from cow No. II, Mt. Lebman, (Taylor's). Sub cutaneously Aug. 17, 1908.



10 Erythrocytes=7,200,000.
11 A few parasites observed.

15 Erythrocytes=6,400,000.
17 Skin and visible mucosa becoming very yellow.

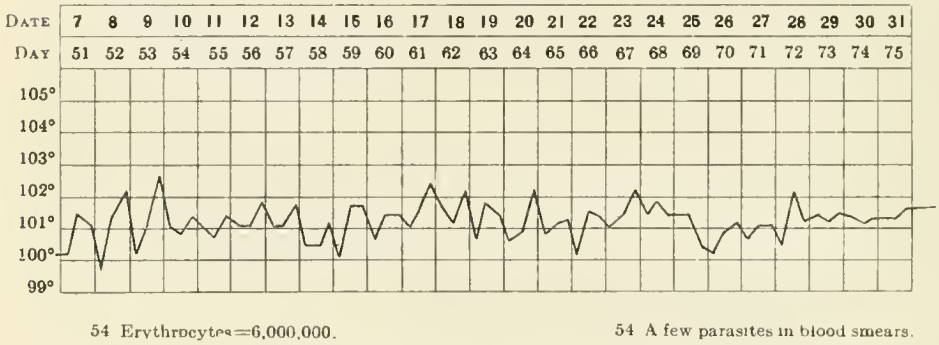
CHART G, Continued



30 Bled and blood centrifugation, un signs of trypanosomata.

31 Animal's condition improving.

CHART G, Continued

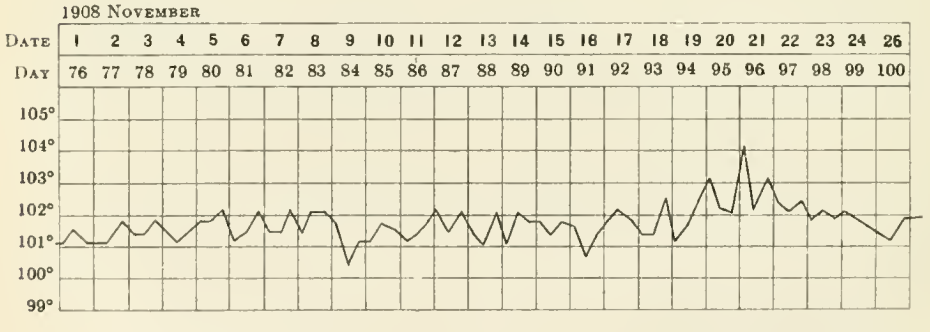


54 Erythrocytes=6,000,000.

54 A few parasites in blood smears.

Temperatures to April 30, 1909, show very little variation from normal.

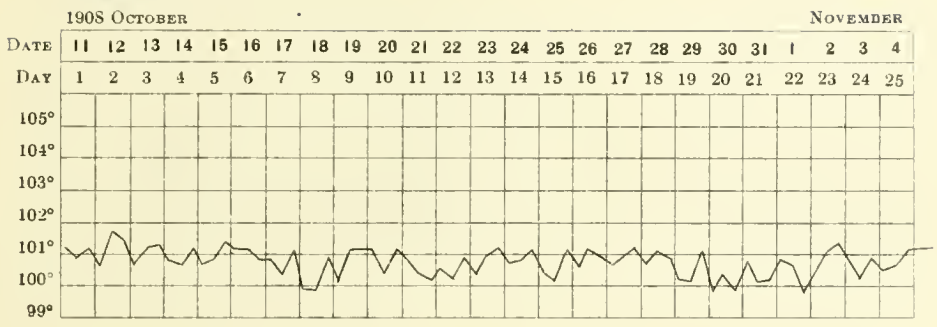
CHART G, Continued



78 Skin no longer yellow. Mucosa of eye blanched. Anæmia pronounced.

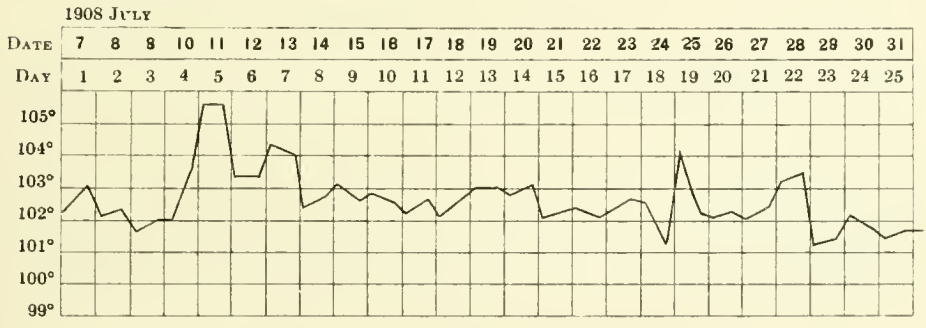
95 A few parasites.

Red Water
Chart H
No. IV. Kamloops heifer
Control



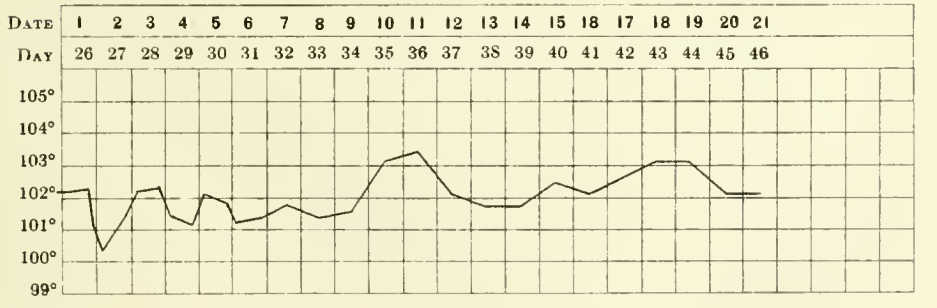
Temperatures to April 30, 1909, show very little variation from normal.

Red Water
Chart I
Mare No. I.
Infecting material,—2 c.c. m. blood x normal saline solution from ear of heifer No. II, injected into posterior articular vein, July 6th, 1908

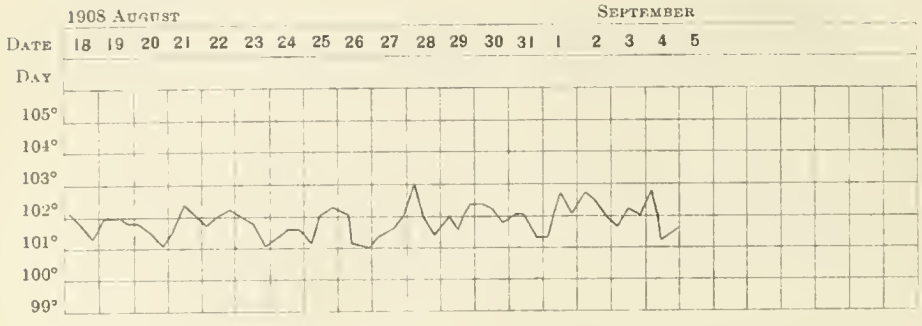


5 Found with a broken leg. Set same day.

Chart I, Continued

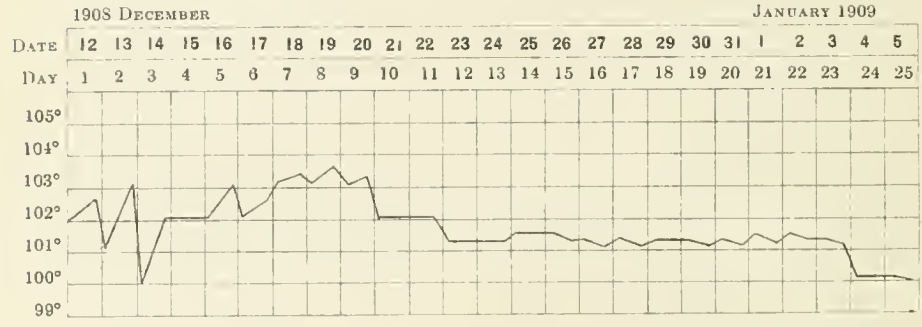


Red Water
Chart J
Guinea Pig No. 2
Infecting material,—2 c.c.m. defibrinated blood intraperitoneally from cow No. 11, (Taylor's) Aug. 17th, 1908.



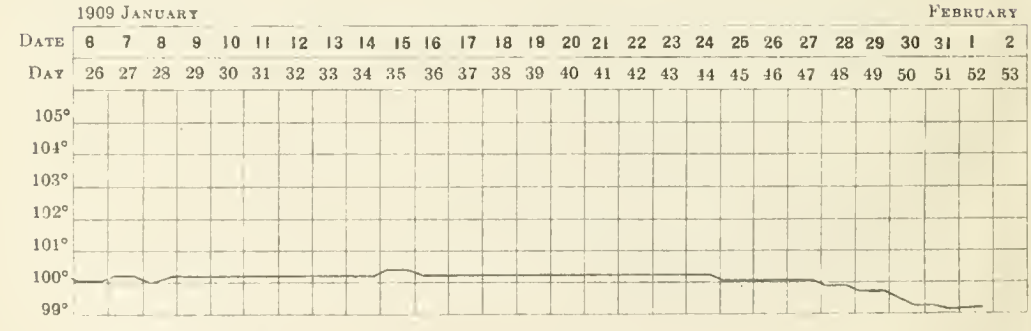
*Found dead. post mortem 10 30 H.M.

Red Water
Chart K
Bull No. I. (Mr. Phillips').
Natural Infection. First attack early in spring of 1908.



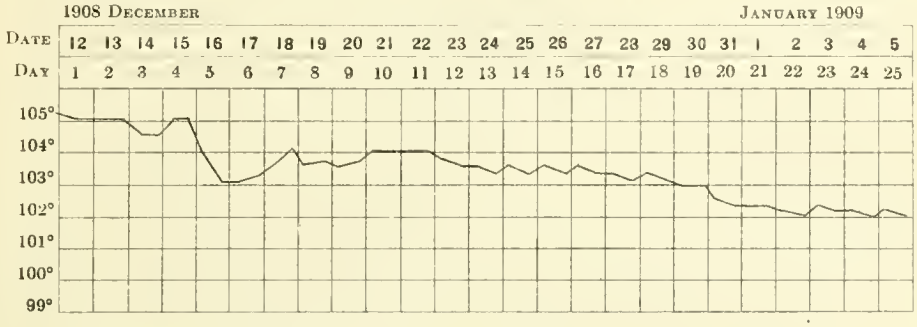
Haemoglobinuria present—most of the time—great wasting of muscles of the loins.
Treated medicinally with quinine and other tonics for about 8 months.

Chart K, Continued



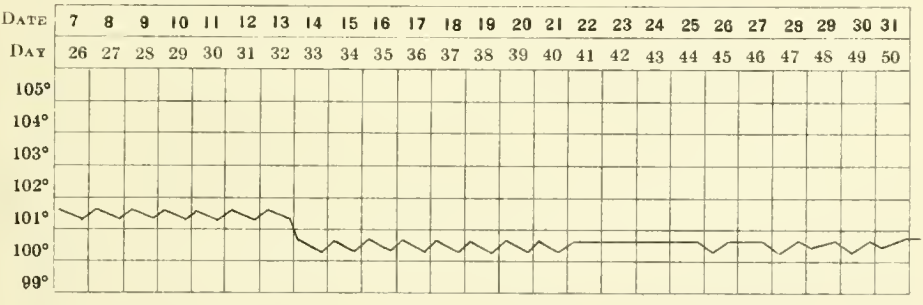
*Shot, February 2, 1909, in extremis.

Red Water
Chart L
Heifer No. 11.*
Infecting material,—Vide Chart F. Sent to Mr. Phillips' farm, Mt. Lehman, December 11th, 1908



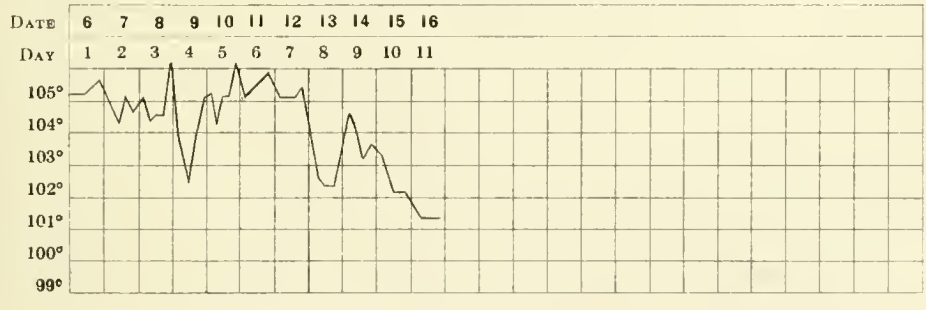
*Placed under natural conditions and in contact with an infected herd. Also bred. At present this heifer is in good condition and shows no signs of disease.

Chart L, Continued



*The variation during this month is according to the temperatures kept and forwarded by Mr. Phillips. February only showing a variation of about ·1° An extended chart is not included.

Influenza (?)
Chart M
Horse No. 2.
Infecting material,—Secondary infection, associated with Icterus and the presence of Haemocytozoa in the Erythrocyus.



*First day of observation until fifteenth day of illness.
xRecovered.

APPENDIX No. 14.

W. H. PETHICK, V.S.

ANTIGONISH, March 31st, 1909.

SIR,—I have the honour to submit the following report for the year ending March 31st, 1909.

In several preceding reports I have dealt more or less fully with 'Pictou Cattle disease' and have given a detailed account of the experiments which I had the honour of conducting under your direction at the Station at Cloverville.

In order that the public might derive full benefit from the result of our work, you instructed me by letter, under date of March 10th, 1908, to deliver a series of lectures and addresses at as many points as possible in the ragwort infested districts of Nova Scotia and Prince Edward Island, the subject matter being:—The part played by ragwort in the causation of Pictou cattle disease; the advisability of securing as far as possible the extermination of the weed, and the means by which this may be most effectively accomplished.

I have now held fifty four public meetings at central points. These were well attended and much interest shown. I have visited hundreds of farms, many schools, attended and spoke at exhibitions, Municipal, Town Council and Board of Trade meetings, the agricultural college, dairy school, seed fairs, agricultural picnics and other public gatherings and may say, have taken advantage of every opportunity of meeting the people and discussing fully the practical methods of getting rid of the pest. To this end I have advised a shorter rotation of crops than is usually practiced in Eastern Nova Scotia, more thorough cultivation, the more frequent use of weed destroying implements, the importance of cutting the weeds before the seed forms on the highway, in fence corners and headlands.

As we have now ample proof that sheep may be profitably employed in clearing ragwort infested land and will do the work more thoroughly than by the means already suggested, I have strongly advised the running of larger flocks on the hillsides, rocky pastures and wasteland.

The special report issued by your department, as also circulars dealing with the subject, have been freely distributed by mail and at meetings, and many letters have been written to people who could not well be reached otherwise.

I take this opportunity of acknowledging the valuable assistance rendered by the Clergy, The Chief Superintendent, Inspectors and Teachers in the educational service, the officers and staff of the Agricultural College, the Superintendent and Officers of Farmers' Institutes, the Physicians practising within the ragwort area and the Press. These and many other public spirited people have done much good both by precept and example. I wish also to express my admiration of the work done by the Womens' Council of East Pictou, and to thank these ladies for their hearty co-operation.

I am glad to be able to inform you that much progress is being made all along the line. In many sections the weed has already been successfully fought and I have every reason to believe that a still more vigorous campaign will be conducted next summer, and that the ragwort will be brought under control in many other sections.

Perhaps the strongest proof that the suggestions which we have been able to offer, as a result of the knowledge gained by our experiments, and also that the object for which the station was established has been gained, is the fact that there is a very marked decrease in the number of cases of Pictou cattle disease as compared with former years.

You will be pleased to learn that in several sections, where a few years ago the disease was prevalent, not a case is reported during the past season. I have favourable reports from every district; as an example:—Rev. D. L. Macdonald of Arisaig informs me that, so far as he can learn, not more than eight deaths from Pictou cattle disease occurred in his parish during the year. I need only add that a few years ago this would not be considered a high mortality for one month in summer, in the same district. This, together with satisfactory reports from other reliable and well informed gentlemen in other localities, is certainly most encouraging.

The arrival in early June of a car-lot of pure bred rams from Ontario in charge of Mr. Scott, a capable sheep man, afforded me the opportunity I had long wished for of demonstrating to our many visitors the beneficial effect upon sheep of kindness, careful management, generous feeding, change of pasture, value of rape, turnips, etc., as well as the importance of dipping, trimming, docking and the castration of market lambs. These subjects are dealt ably with by Mr. Spencer in bulletin No. 12, which I hope will be carefully read by our sheep owners.

As Mr. Spencer was fortunately able to be present and personally direct the auction sales of the rams referred to, and has no doubt reported fully, further comment by me is uncalled for. I would, however, state that the introduction of these high class sheep will, by increasing the profits of the flocks, do much to encourage the sheep industry within the weed area.

In addition to the work referred to, my services have been utilized as heretofore in connection with reported outbreaks of contagious diseases. Such matters were promptly and carefully investigated and already reported upon.

The existence of foot and mouth disease in several of the United States made it necessary for me to devote considerable time to the enforcement of the regulations and prohibitive orders. I have from time to time sent you detailed accounts of my visits to different ports, and of my work in this connection.

PORT INSPECTIONS.

You will have noticed by the reports which I have had the honour of sending you monthly, that the number of animals inspected by me, before shipment to Newfoundland, were as follows:—

From Mulgrave, 33 horses, 495 cattle and 404 sheep.

From Bayfield, 20 horses, 259 cattle and 76 sheep. I have also applied the tuberculin test to an animal for export to the United States. All were healthy and in fit condition, and I may state that all classes of live stock were remarkably free from disease during the year.

In conclusion, I might mention the existence on certain farms on Cape Breton Island, of 'Nodule disease' in sheep, caused by 'œsophagostoma columbianum.' In investigating the conditions existing on certain farms where the disease was most troublesome, I found that while the flocks were, as a rule, well cared for, the grass and hay upon which they fed was badly infested with the 'cottony grass scale' (criopeltisfistucoe). As the feeding upon such dry and innutritious grass containing the cottony egg sacs would certainly lower the vitality of the animals and lessen their resistance to worm disease, I recommended that an effort be made to destroy the scale, by burning over the pasture and meadows in the fall or early spring. I also gave as full information as possible concerning the methods of raising a flock, free from the parasites.

I have the honour to be,
Sir,
Your obedient servant,
W. H. PETHICK,
Inspector.

To The Veterinary Director General,
Ottawa.

SESSIONAL PAPER No. 15b

APPENDIX No. 15.

J. J. McHUGH.

OTTAWA, January 4, 1909.

SIR,—In accordance with your instructions of May 16th, 1908, I have made a careful investigation of conditions prevailing in the shipment of cattle from Canada and United States to British markets. I visited Montreal, Boston, Portland, New York, Philadelphia and Baltimore in order to institute a comparison between American and Canadian methods in the transportation of cattle, by rail and boat. To the same end, I crossed the Atlantic six times on cattle boats of different lines, both American and Canadian, viz.:—ss. *Athenia* (Donaldson); ss. *Ionian* (Allan); ss. *Iona* (Thompson); ss. *Haverford* (American); ss. *Monmouth* (C.P.R.).

I have also made a careful note of conditions prevailing in British ports and markets, visiting Liverpool, Glasgow, Deptford, Manchester, Bristol, Cardiff, Smithfield, and numerous other important places.

Many of these visits were made in your company and you are therefore personally familiar with the conditions described as well as with most of the other matters dealt with in this report.

The results of my observations are embodied in this report accompanied by certain suggestions, which if carried out, will, I think, greatly improve our Canadian cattle trade.

All of which is respectfully submitted.

CONDITIONS ON CANADIAN CATTLE BOATS.

(1).—TEMPERATURE AND VENTILATION.

In summer.—From my observation on a number of cattleships leaving the port of Montreal, I judge that the temperature conditions in Summer are generally fair. There is, however, no doubt that they could be improved by increased ventilation, as at present the average temperature for a considerable portion of the voyage is frequently between 70 and 80 degrees on the lower decks. Of course, the temperature varies with the number of cattle placed on each deck,—the fewer the cattle, the more comfortable the temperature. On the upper deck, the cattle enjoy plenty of fresh air, but at times suffer considerably from the heat of the sun.

In the other seasons the temperature on the lower deck is comfortable, but by no means so on the upper deck. I would suggest that under no consideration cattle be allowed on the top deck of any ship (if the said deck is not covered) between the 15th. of October and the 15th of May, as they suffer to no small extent from the cold air and spray. As an instance of this, I may say that I saw cattle unloaded at Deptford on October 18th, 1908, and those which came off the upper deck could be easily distinguished from the others, by the roughness of their hair, and their gauntness, due to the usage they had received there. I should estimate their shrinkage at about 2½ per cent greater than that of the cattle below them, though they were all of the same grade and condition when leaving port.

(2).—COMFORT IN THE STALLS.

The regulation space for each animal is at present 8 feet long by 2 feet 8 inches wide, which I consider insufficient. The present width is adequate when the cattle

are standing up, but inadequate when they lie down. The present length is sufficient for the average animal, but not so for long and rangy cattle, and heavy bulls. For instance on the ss. *Ionian*, Allan Line, on July 10, 1908, I saw a shipment of cattle. The fittings were put in temporarily for the trip, but of regulation size, and I noticed that some of the larger cattle were touching at both ends and were very uncomfortable all through the voyage. I would, therefore, recommend that the regulation space be increased to 8 feet 6 inches in length and 2 feet 10 inches in width for export cattle. On the floors of all the stalls of these ships, there are four cross-pieces, three of which seem to me to be not merely useless but even injurious to the cattle. There is not generally sufficient bedding to completely cover these cross-pieces, and consequently when the cattle lie down on these more or less sharp-edged timbers they are extremely uncomfortable. As a rule, the manure is not removed and the bedding when spread is gradually worked by the moving of the cattle until their hind legs are considerably higher than their fore legs, and the latter are resting on the cross-pieces when the cattle lie down. Moreover, owing to the manure and bedding not being spread evenly, and owing also to the insufficiency of the bedding, the stalls become very filthy; hence it frequently happens that from one or another of these causes the animals remain standing until forced to lie down through fatigue.

The above mentioned cross-pieces may have been required in the older ships, which were slower, more unsteady and of a smaller capacity, but in the modern ships, the cattle would be sufficiently braced against rolling by the back cross-piece being moved a foot forward, as they could then prop their hind feet against this and their fore feet against the trough. By doing away with the other cross-pieces, if there should be insufficient bedding, the cattle would not be in such discomfort.

(3)—FACILITIES FOR FEEDING AND WATERING.

These are by no means up to date on the Montreal ships. They consist of puncheons and large barrels filled with water by hose; the water is then carried to the cattle in pails, out of which they drink. The manner of feeding the hay is as satisfactory as possible. On many of the ships the troughs are more or less in bad repair, with the result that much of the corn is scattered and wasted.

(4.)—SHRINKAGE.

Owing to these conditions, the shrinkage of cattle on the ocean voyage is very considerable, amounting on an average to 50 to 60 pounds per bullock, and in some cases of wild ranch cattle the shrinkage is double this amount.

In your memorandum of May 16th you request me to institute a comparison between these ships and the best equipped cattle-boats crossing the Atlantic; as the time allowed for my investigations extended merely from June till November, and as a great deal of that time was spent in inspecting cattle-markets, stock-yards and abattoirs on both sides of the Atlantic, I was able to observe conditions on only two thoroughly well-equipped American cattle boats.

The first of these was the ss. *Ulstermore* of the Johnston Line, sailing from Baltimore to Liverpool. I saw this ship in the latter port. She has only two decks for cattle. Each deck contains four rows of cattle running the length of the ship. Between the rows, there is a passage 6 feet wide. The floor is of concrete, grooved, to prevent slipping, besides the regulation cross-pieces. The space for each animal is 8 feet in length, 2 feet 8 inches in width; but in addition to this, there is a space of 18 inches behind the cattle for cleaning purposes, and numerous port-holes for the same. The troughs are of concrete. The ventilation is good and all parts of the ship are equipped with sufficient electric light.

The second ship which I had the opportunity of inspecting was the ss. *Haverford* of the American Line. I sailed on her from Philadelphia to Liverpool on

September 20th, 1908. Her capacity is 830 head of cattle, but on that voyage she only carried 630. This ship has practically the same space and equipments as the *Ulstermore* except that the water is supplied by hose, instead of by pail. I was present at the loading and unloading of the cattle on the ss. *Haverford* and in my opinion as well as that of the cattle foreman, there was no shrinkage. Of course, those cattle were all dehorned, grain fed, and domesticated; and when tied up and fed, acted like cattle eating in their barns.

(5.)—SHRINKAGE OF VARIOUS CLASSES OF ANIMALS.

1st. *Summer and Autumn.*—Shipped grass-fed medium fat cattle shrink 40 to 45 pounds per bullock on an ordinary voyage with good handling; on a rough voyage the shrinkage would be 70 to 75 pounds.

2nd. *Winter and Spring.*—Shipped hay-fed medium fat cattle shrink from 25 to 35 pounds per bullock on an ordinary voyage, with good handling; on a rough voyage 50 to 60 pounds.

3rd. *Summer and Autumn.*—Shipped grain-fed medium fat cattle being domesticated, shrink only 15 to 20 pounds per bullock on an ordinary voyage, with good handling; on a rough voyage 30 to 40 pounds.

4th. *Winter and Spring.*—Shipped grain-fed medium fat cattle shrink 30 to 40 pounds with good handling.

5th. Well-finished grain-fed cattle, shipped at all seasons of the year, shrink a little more than the above figures, owing to their superfluity of flesh; in distillery-fed cattle, the shrinkage is double that of the hard-grain-fed cattle.

The above figures apply only to eastern domesticated cattle. In the case of western cattle, both domesticated and ranchers (and particularly the latter) the limit of shrinkage has almost been reached during the transit by rail; of which I shall again make mention in this report.

COMPETITION WITH CATTLE AND DRESSED MEAT FROM OTHER COUNTRIES.

Our Canadian cattle have to compete with the following: English, Irish and Scotch well-finished live stock; American well-finished live stock; American chilled meat, Argentine and New Zealand chilled and frozen meat.

The following are the prices these various classes fetch in the English markets. As there is a certain amount of fluctuation, I have thought it advisable to quote prices in two or three of the principal markets, during the period extending from July to November.

Smithfield Market Quotations.

July 8, 1908—For dressed beef per 8 lbs. Sinking the offal—
Killed, States sides 3/9 to 4/1. Ex. 4/2.
Killed, Canadians, 3/8 to 4/. Ex. 4/1.
July 15, 1908—
Killed, States sides, 4/4 to 4/8 per 8 lbs. Sinking the offal.
Canadians, 4/2 to 4/8.
July 22, 1908—
States, 4/4 to 4/8 per 8 lbs.
Ranchers, 3/11 to 4/2 per 8 lbs.
States, 4/4 to 4/8. Exceptional 4/10.
July 29, 1908—
States, 4/8 to 4/9. Seconds, 4/5 to 4/7.
Canadian, 4/4 to 4/8.
NOTE.—The above are the top prices.

August 19, 1908—
Best States, 4/7 to 4/9 per 8 lbs. Sinking the offal.
Seconds, 4/4 to 4/5 " "
Canadian, 4/2 to 4/8 " "
Ranchers, 3/8 to 4/2 " "

August 29, 1908—
Smithfield, States sides, 3/10 to 4/0.
Birkenhead, States sides, 3/8 to 3/11.
Canadian, 3/1 to 3/9.
Ranchers, 3/ to 3/6.
Argentine, hinds, 3/4 to 3/10.
Frozen hinds, 3/2.

September 1, 1908—
Best States cattle realized 4/8 per stone 8 lbs.
Second quality, 4/2 to 4/4.
Canadians, 3/10 to 4/4.
Ranchers, 3/7 to 3/9.

September 23, 1908—
States sides, 3/4 to 3/9.
Birkenhead, States sides, 3/4 to 3/7.
Canadian, 2/10 to 3/4 and 2/10 to 3/5.
Ranchers, 2/6 to 2/10 and 2/6 to 3/.
Argentine, hinds, 2/10 to 3/3.
Argentine fores, 2/3 to 2/4.
Frozen hinds, 2/9 to 2/11.
Frozen fores, 2/3 to 2/4.

October 5, 1908.—Smithfield market quotations for the undermentioned classes of frozen meats, based on actual sales of not less than 100 carcasses of mutton or lamb, or 25 quarters of beef of fair average quality.

These quotations are not for selected lines, but for parcels fairly representative of the bulk of the shipments now on the market.

CROSSBRED WETHERS.

——	Lbs.	Price.
New Zealand sheep Canterbury Maiden ewes	48–56	4½
" " " " "	56–64	4⅝
" " " " "	64–72	3¾
" " North Island " "	55–65	3½
" " " Best Brands Maiden ewes	55–65	3¾
Australian Sheep Light Crossbreds and Merino wethers	40–50	3¼
River Plate sheep heavy " " "	50–65	3 3/16
" " light " " "	40–50	3⅜
New Zealand lambs, Canterbury	28–36	5½
" " "	36–42	5 7/16
" " "	42–50	4½
" " South Land	28–42	5¼
" " North Island	28–42	5¼
River Plate lambs	28–42	4⅞
New Zealand frozen beef ox fores	160–220	3¼
" " " hinds	160–220	4⅛
River Plate frozen beef ox fores	160–220	3⅜
" " hinds	160–220	4

October 13, 1908—
Best quality States, 4/5 to 4/7, 4/2 to 4/4.
Canadian, 3/10 to 4/1 per 8 lbs. Sinking the offal.

October 17, 1908—
Deptford States (940), 4/4 to 4/6.
Canadian (87), 3/9 to 4/3.
Ranchers (300), 3/6 to 3/11.
Westerns (200), 3/ to 3/6.
November 18, 1908—
Deptford killed, States sides, 3/4 to 3/9.
" Canadian, 3/2 to 3/6.
" Ranche, 2/9 to 3/2.
States chilled beef hinds, 3/6 to 4/6.
" " fores 2/4 to 2/6.
Argentine hinds, 2/2 to 2/6.
" fores, 2/1 to 2/.
" frozen hinds, 2/6.
" frozen fores, 2/2.

It will thus be seen that at present the best States fresh-killed beef fetches from ¼ of a cent to one cent per pound more than the best Canadian beef.

Best New Zealand frozen beef sells a fraction over 7½ cents per pound in quantities of not less than 25 quarters.

Best Argentine frozen beef sells at 7½ cents per pound in the same quantities.

Best American chilled beef sells at 9¼ cents a pound in the same quantities.

Best English, Irish and Scotch fresh-killed beef fetches about a cent per pound more than the best American fresh-killed beef in the same quantities.

TRANSPORTATION OF CATTLE ON RAILROADS.

Canadian cattle cars.—The Canadian cattle cars though somewhat improved during the last few years are still sadly deficient in many respects; in the first place, the livestock cars are too narrow, and are used for other purposes at certain seasons of the year, such as carrying emigrants' effects and general merchandise, with the result that when the cars are used for the transportation of live-stock, notwithstanding the supervision of the car-examiners, bolts and heads of nails are frequently left projecting, and cause considerable damage to the cattle.

Again, a number of cars are equipped with hay-racks, the capacity of which is barely sufficient for one feed, and as it is impossible to replenish them while the cattle are in transit, the latter suffer very much from lack of feed until they are unloaded at the various stopping places. There are no appliances for watering cattle on any of the cars, and as the feeding and resting places are far apart, it sometimes happens that the stock remains two and three days without feed and water. Where there are no hay-racks in the cars, the hay is scattered over the floor, and of course, in a very short time becomes filthy and unfit for use, from the shuffling and drop from the cattle.

The door-ways on all the C.P.Ry. cars are in the centre and have square edges, which is damaging in the loading and unloading of cattle, as they crowd from both ends towards the centre, and get jammed in the doorway; the point of the hip being frequently bruised.

Moreover, very frequently, the speed of the train is retarded by the over-tonnage caused by picking up at various points, additional cars of dead freight, such as wheat and special merchandise, thus keeping the cattle in transit many hours longer than they should be. I have, personally, accompanied cattle on trains in cold weather when the engines went dead, and left the train of live-stock standing for hours until another engine could be secured. I might mention a case which occurred to my own stock in November, 1906. I loaded 7 cars of cattle at Cayley, Alta., on Sunday the 25th of November. There was some delay before getting the train-load

complete at Gleichen. Another delay at Medicine Hat owing to the engine and crew not being in readiness. At Swift Current, they put on 6 cars of wheat which overloaded us. The Conductor had orders for a '25-miles-an-hour run,' but at no time did he make that speed. We did not rest or feed at Moosejaw. We rested 24 hours at Winnipeg, but after reloading, were held 5 hours longer in very cold weather, owing to the engine and crew not being in readiness. At Winnipeg, 3 additional cars of dead freight (offal) were attached to our train in place of 3 cars of D. P. McDonald's cattle which were left standing on the side-track for 18 hours in open cars. I may mention that those 3 cars of offal were consigned by Gordon and Ironsides to Liverpool, and were to sail with our cattle on the ss. *Sachem* from Boston. McDonald's cattle did not overtake us till we were in Montreal, and then only a few hours before we pulled out for Boston, much the worse for the usage they had received. I may also mention that two of our best steers, branded 'H 2,' were stolen from the Winnipeg stock-yards, while we were resting there.

This is but one example of the many delays which occur in the transit of cattle from Western points. As a result of these unsatisfactory conditions, the cattle arrive at the port of embarkation in a bruised, tired, dirty and emaciated state, and far less fit to stand an ocean voyage than they would otherwise be. I should consider the shrinkage of the train-load of cattle above mentioned, to be at least 100 pounds per head; of course, they are grass-fed range cattle.

I know of a shipment of Gordon and Ironsides in which 3 of the cattle were so much injured during the railway journey that they died on board ship. In general terms, I should estimate the proportion of range cattle more or less injured by bruises, during railway transit, to be about 5 to 6 per cent. In my opinion more care should be taken by all conductors of cattle trains, in shunting, starting and stopping, to avoid unnecessary jolting and bruising.

Some Canadian shippers hold that the closer the cattle are packed in the cars the less danger there is of bruising; such however, is not my opinion. I consider that when cattle are crowded, should any fall or lie down there is less possibility of their rising. The stock-cars at present in use, should not contain more than 16 or 17 export animals.

In a word, our present Railway facilities are of the crudest. Live animals, fattened at considerable expense, are treated with scarcely greater consideration than lumber or wheat.

AMERICAN CATTLE-CARS.

The American cattle-cars are superior in every way to ours. They are longer and wider, and generally have facilities for feeding and watering cattle in transit. On September 10th, 1908, at Boston, I inspected the unloading of a shipment of cattle from the trains into the ss. *Georgian*. The cars were marked 'Swifts' Live Stock Express, Special Stock-Cars. They were 36 feet long and 8½ feet wide. All the doors were on the end side of the cars and were in halves; the under half swinging down on hinges to form a platform to the landing; the upper half sliding back. This, I consider a great advantage, as the ordinary gang-way which we use is very massive, and requires the service of two men to push it in place at the door of each car. The door-jambs were bevelled instead of having sharp edges like our cars. On the top of each car, there were one or two covered boxes containing 200 pounds or more of pressed hay. The roof of the cars was cut along the edges on both sides to form 3 feet hinged lids running the whole length of the car, by which the hay may be distributed from the boxes to the racks below. Inside the cars in addition to the racks there were troughs for water and chop running the whole length of each. These were of galvanized iron and could be turned up on a hinge against the side of the car when not in use.

Some of the cars marked 'American Live Stock Transportation' had similar conveniences, except that the door was in the centre of the car. I am informed that on the Great Northern railway, and the Northern Pacific railway, Street's stable cars are generally used, which are invariably equipped similarly to those described above, and so enable the cattle to be fed and watered as often as necessary, en route, thus preventing the animals from being starved between the various feeding points. The cattle are loaded in these cars under careful supervision, and no overcrowding is permitted; as I mentioned above, 17 is generally the maximum number of cattle per car. Moreover, the cattlemen are nearly always regular salaried employees of the shippers, thus preventing ill-treatment, and a foreman accompanies each train load of cattle to seaport. There, they are handed over to another cattle foreman, a regular employee of the shipper, who is accustomed to sea voyages, and the care of cattle. Thus the shrinkage and mortality are reduced to a minimum.

Again, the speed of the American live stock trains is nearly double that of ours; consequently, the cattle are not kept nearly so long in transit.

There can be no doubt that cattle carried on these cars arrive at the port of embarkation with very little shrinkage, and are altogether, cleaner, fresher and in much better condition to stand the voyage. Of course, these cattle do not arrive directly from the range, but have been domesticated, dehorned and corn fed, in the middle states, for a period of 70 to 90 days, before being shipped to seaport.

THE EMBARGO.

In answer to your query *re* comparative prices under existing conditions of American and Canadian cattle, allow me to refer you to another page of this report.

If the embargo were removed from both American and Canadian cattle, they would when well-finished command the same price. Of course, owing to the Americans' superior shipping facilities, our cattle would require a much longer time to finish, thereby entailing extra expenditure.

With regard to comparative prices of American and Canadian cattle, if the embargo were removed from the Canadians and left on the Americans, I should say that our cattle, after being well-finished on the other side, would command the same prices as those of the English, Irish and Scotch best beef.

PROBABLE EFFECT OF REMOVAL OR EXTENSION OF EMBARGO.

If the embargo were removed from Canadian cattle, there would probably be a considerable increase in the trade, as a number of small shippers would then export long yearlings and two-year-olds. This would no doubt be of advantage to these shippers, but not to the country in general.

Hay and grain are much cheaper in Manitoba, Alberta and Saskatchewan, and consequently a bullock can be finished there at less than half the cost in Great Britain. Hence, in my opinion, Canadian shippers in general would find it more profitable to finish their cattle here, and so much more money be left in the country.

To the large exporters who have their cattle well-finished, the removal of the embargo would not be of any great advantage, but it would be advantageous to those whose cattle arrive in somewhat poor condition.

The yarding facilities would have to be materially increased to give space to cattle landing from the ranches and other places, in a bruised and emaciated condition, for the purpose of finishing and obtaining a better market. Of course, the bulk of these cattle would remain only a short time in lairage before going to their feeding places, as for instance, young stockers which would be taken away almost immediately on landing. There is no reason, except the expense involved, why the lairage owners should not provide increased accommodation.

EXTENSION OF THE LIMIT.

There is an agitation to have the embargo, if it be not altogether removed, extended to 30 days or longer. I would advocate an extension to 40 days which would be a great boon to all shippers of export cattle. Under the present system, a great many of our cattle land in Great Britain, as I said before, in a very inferior and shrunken condition, due mainly to the railway journey and ocean voyage. Ten days is not sufficient length of time for them to recover and be in fit condition for the market; an extra 30 days would do much to rest the cattle and freshen them before selling, more especially the domesticated stable-fed stock. Moreover, this extension of time would enable the exporter to receive the top market price for his cattle during that period. As you are no doubt aware, it occasionally occurs that the British buyers wait until the tenth day before buying, in order to procure the cattle at the lowest possible price. Of course, many of the tops are bought almost immediately after landing, and in many cases the exporter would be in pocket by accepting market prices for the rest of his cattle, if the market showed any signs of weakening. In any case, he would have the choice of prices ruling during that period.

TRANSPORTATION OF SHEEP.

In December, 1906, in crossing from Boston to Liverpool I experienced a very rough voyage on ss. *Sachem,* which carried 2,000 head of sheep. These sheep were in boxes and pens on the upper deck. At least 500 head were lost from cold and exposure to rain and spray. One compartment containing 150 sheep was washed overboard. The sheep were of medium class, and were landed at Birkenhead. I am not sufficiently acquainted with sheep conditions to estimate their shrinkage, etc., during this voyage.

Last June I saw on the ss. *Athenia*, leaving Glasgow, several hundred high class pedigreed sheep going to the Toronto exhibition. They had very comfortable quarters on one of the lower decks, and were well fed on roots, hay and chop. Generally speaking, I should say that the export sheep trade requires the same improvements as that of cattle on ship board. I would specially recommend that no sheep be carried on top decks from October 15 to May 15.

TRANSPORTATION OF HORSES.

For valuable broken horses, the accommodation on trains where shipment is not too large is excellent, as palace horse cars which are very comfortable can be secured. In shipping large train-loads of more or less unbroken horses which, however, is becoming less common, the inferior live stock cars already referred to, must be used. On shipboard the accommodation for horses is better than that for cattle, owing to greater space being allotted on account of their fewer number. Of course, you are aware that at the present time, very few Canadian horses are exported.

SUGGESTIONS FOR THE IMPROVEMENT OF THE CANADIAN CATTLE TRADE.

1. *Railway Service.*—This as I have before stated is by no means satisfactory. Our freight rates are much too high. The railway companies should be compelled to comply with the law by having printed lists of their rates posted in conspicuous places at shipping points of live stock; and all shippers whether large or small should be given the same attention and advantages.

The present car service should also be a subject of investigation. The superiority of the American cattle cars has been shown in this report.

I would likewise call your attention to the delay in transit, caused by defective system, inferior speed and overloading of cattle trains, as also to the injury to cattle caused by rough and careless handling. No bill of lading should excuse the damage sustained by cattle in transit.

2. *Preparation of Live Stock for Shipment.*—I would suggest that all possible steps be taken to point out to our Canadian cattle breeders the very great advantage it would be to themselves and also to the cattle, to have all cattle dehorned when calves. This would apply more forcibly to ranch cattle which go in large numbers together and in cold weather squeeze into small space for shelter. This will also help to domesticate them. I might say that it would be advisable in shipping to mix ranch cattle with domestic ones as they will handle better, and load and unload more easily. Cattle should not be shipped direct from the ranch to foreign markets, but should be carefully fed on hay and grain for three months or longer in open sheds, and dehorned (if this has not already been done); during this period also, ranch and domestic cattle should be mixed as much as possible. When well finished the tops should be picked for export, and the remainder shipped to the best Canadian markets.

Very few of our western ranchers have any knowledge of this way of handling cattle, which is general in the United States, and I would suggest that a quantity of printed matter be supplied by the department explaining its advantages.

3. *Montreal Stock Yards.*—Those yards are in themselves sufficiently commodious and comfortable, but are not conveniently situated for the proper handling of export cattle. I would, therefore, suggest the advisability of erecting union stock yards at Montreal. There is a good site for such between the Dominion Coal Company's wharf and the Victoria bridge, and I understand it is the property of the government. Cattle could arrive there from all points by rail, and thence be loaded on ship-board, directly by gangways. Thus, the passage of the cattle through the streets, with its loss of time, as also the loading and unloading from barges, with its consequent abuse and depreciation of the stock, would be eliminated. I consider this a very important matter, as the construction of such yards would make Montreal the foremost cattle port in North America during the season of navigation on the St. Lawrence, since a great number of American shippers would take advantage of these unique facilities, provided that cheap rates prevailed. The export of live cattle to Europe will in all probability increase from year to year.

I might suggest that it would be advantageous to cattle and live stock shippers, if all stock yards were constructed with corrugated concrete floors and with all fixtures and enclosures of small metal. In cases where animals are tied up, iron stanchions should be used. The use of concrete will facilitate cleaning operations, and the use of the smooth metal will reduce chafing to a minimum. I consider this very important, as cattle frequently rub themselves against the wooden fixtures and leave on them a deposit of hair which may contain germs of mange or other diseases. In this connection let me quote President Whaley of the East Buffalo Live Stock Association, who a few weeks ago said apropos of the foot and mouth disease, then prevalent:—'This is the time that the legislature should get busy framing a law calling for the construction of stock yards of steel and concrete all through the state, with pens so constructed as to be flushed every day. This is the only solution of the problem of sanitary stock yards.'

In conclusion, it is my firm opinion that up-to-date stock yards in Montreal with the above mentioned site and improvements would, if the shippers allowed their cattle sufficient time for rest and feed therein before embarking, greatly diminish the shrinkage on ship-board.

4. *Steamship Service from Canadian Ports.*—The various lines have some ships which are better than others for carriage of cattle, but I should say that none of our Canadian boats are as well equipped as the average American ship. The following suggestions would, I think, if carried out, affect a decided improvement in them:—

1st. The regulation space should be increased to 8 feet 6 inches in length and 2 feet 10 inches in width. An additional space of 18 inches should be left behind

cattle for removal of manure which will also be facilitated by increasing the number of portholes.

2nd. All floors should be of grooved concrete to facilitate cleaning and prevent slipping; the same should always be sanded according to regulations.

3rd. Three of the cross-pieces should be removed leaving only the hindmost which should be brought forward one foot and be of square shaped metal, embedded in the concrete.

4th. All wooden fixtures should be removed. Troughs should be movable, of galvanized iron, and supplied with water by hose. Tie-ropes should be replaced by movable stanchions or iron tubing.

5th. Hatchways should be sufficiently large to prevent too steep a descent which causes delay and abuse in loading and discharging cattle.

6th. There should be ample ventilation and electric light.

7th. Upper decks should not be used for carriage of cattle during the spring and winter months.

5. *Care of Cattle on Ship-board.*—None but men who are sober and experienced in the care of cattle and accustomed to ocean voyages should be employed, as otherwise the cattle are bound to be seriously neglected. It would be better if these men were regular salaried employees of the shipper, receiving a fair wage, and given comfortable quarters on the ship. Any extra expense in this matter would be more than off-set by the superior condition of the stock when landed. There should be careful supervision of all hay and grain supplied on board, and nothing but best quality accepted.

6. *Care of Cattle at Port of Landing.*—On arrival in port, cattle are unloaded by dockhands. This practice should be abolished. The men who have crossed with the cattle should have full control of their discharging, thus avoiding their being handled by irresponsible, inexperienced, cruel and frequently inebriated wharf-loungers, who do not hesitate to make use of pitch forks, crow-bars, shovels and sticks with prod-nails.

Again, the officials of the Royal Society for the Prevention of Cruelty to Animals are not allowed to go on board ship, although this is where nearly all of the abuse takes place. The Department of Agriculture would do well to make representations to the British Government in order that these officials be allowed to board all ships as soon as docked, and there exercise their authority. In that case, the shipper would receive some real return for the cent per head of cattle, which he is obliged to pay these men. Should there be any officials of the Humane Society of Canada, to supervise the loading and unloading of cattle, I would recommend that they be placed under the jurisdiction of the Canadian Live Stock Commissioner.

TRANSFER OF SHIPPING SUPERVISION.

In order that the recommendations I have made in regard to shipping may be carried out I strongly urge that the supervision of the shipping of live stock by sea be transferred from the Department of Marine and Fisheries to the Department of Agriculture. The centralization of markets, involving the transportation by sea of a large proportion of commercial live stock, renders the shipping inseparable from the production and marketing. If it devolves upon the Minister of Agriculture through the Live Stock Commissioner to develop and conserve the live stock industry it at once follows that his supervision should not cease until the marketing of the stock is effected, as to discontinue the chain of supervision is to reduce the efficiency of the work the Government in endeavouring to accomplish and in this way hinder the proper development of the live stock industry of Canada. There is much in the present regulations to com-

mend but there is need of the improvements recommended and others that would commend themselves to the Live Stock Commissioner who is always in close touch with the actual needs of the industry.

HINTS FOR SMALL SHIPPERS.

The small shipper is invariably put to serious inconvenience and financial loss, through lack of information and experience, and is entirely in the power of the commission cattle salesmen at the various shipping points, whose prices are so exorbitant as to earn for them the unsavoury nick-name of "The forty thieves." As an instance of this rapacity, I may mention a shipment of my own cattle two years ago in regard to which the charges of these men were so high that the actual cost of transportation and commission to Birkenhead was at least $10 per bullock in excess of what it would cost me now with my present experience.

In order to protect their interests and lessen the risk of loss in transit, shippers should exercise a personal interest as follows:—

To see that there is no overloading of cattle cars. That the cars be carefully sanded according to law and examined to insure that no nail heads or bolts are left projecting on the inside of cars to tear and injure the animals.

To see that hay and grain are properly distributed in the cars.

To see that all car doors are properly closed.

To see that proper care is exercised in the loading and unloading of cattle and also that the stock is unloaded and properly fed at the necessary feeding points.

To see that the hay, grain and water are properly distributed and of good qualiiy and that all cattle are allowed ample time and sufficient space for feed and rest.

To report delay of railway companies in supplying cars in order that just demurrage may be properly estimated.

To report to the Department of Agriculture if stock yards are not kept in a clean and sanitary condition.

To report unnecessary delay in transit also any injury to cattle caused by rough handling, shunting, etc.

SPECIAL DUTIES OF LIVE STOCK AGENTS IN MONTREAL, ST. JOHN AND HALIFAX.

To exercise a general supervision of all men crossing with cattle.

To see that regulations are properly carried out as regards ventilation, light specially for each animal, feeding, hatchways, and facilities for securing the cattle on the ships.

To carefully examine all hay and grain supplied for feeding the stock during the ocean voyage.

To superintend loading of all stock into ships and to prevent seriously injured animals being exported.

To see that upper decks are not used for the carriage of stock during the winter and early spring months, also that all necessary hatches be left open for ventilation and the comfort of the stock.

THROUGH BOOKING OF LIVE STOCK.

Should the Government not see its way to have these agents do the work now done by the commission men, I would suggest that the Railway Companies be prevailed upon to inaugurate a system of through booking, which would still eliminate the commission men, and satisfactorily bridge the gap now existing between producer and consumer. Under this system, the railway companies would take charge of live stock at points in the West, and carry them through to the British markets, at an

inclusive rate to cover rail and ocean freights, shipping, feeding, attendance, and insurance, under the supervision of the Live Stock Commissioner, who would be represented by officials at the following points, viz:—Calgary, Winnipeg, Toronto, Montreal, Deptford, Liverpool and Glasgow. The sender would thus be better enabled to consign his stock direct to the proper authorities at Deptford, Birkenhead, Glasgow or elsewhere. It would doubtless be necessary for the railroads to issue these through Bills of Lading (with insurance documents attached) to the rancher or dealer out West, who could negotiate them through his bank. The railroads and steamship companies may not perhaps see any advantage to themselves in adopting the scheme. They now get their rail and ocean freights without the detail work involved by the above suggestions. The sender, however, could probably well afford to pay a little more for transport under this scheme by reason of the great advantage to be gained. The shipping, feeding and supplying of attendants by the transport companies should not present insuperable difficulties. I am told the Atlantic Transport Line, from New York to London, have had for some years a system of carrying horses somewhat under the above mentioned conditions, which has worked satisfactorily. Horses are received by them in New York, shipped, attended, fed, and insured through to London at an inclusive rate. The ocean insurance on cattle is already, in many cases, covered by steamship companies; possibly some arrangement could be made by which the railroad companies would also cover the protection of stock in transit, under their through bills of lading.

The above system, if found to be workable, would place the cattle-growers and shippers in direct touch with our salesmen and the Live Stock Commissioner at Winnipeg, Montreal, Deptford, Birkenhead and Glasgow, with much more satisfactory results than now obtained. The proposal may present many difficulties, but before it is condemned as impracticable an influential committee acting in the interests of the Canadian cattlemen would probably not be idly employed in investigating the matter.

This scheme would necessitate better connection between the stock-yards and the boats, which would be accomplished by the erection of a union stock-yard in Montreal, as already suggested.

I have the honour to be,
Sir,
Your obedient servant,

J. J. McHugh.

The Live Stock Commissioner,
Ottawa.

APPENDIX 16.

REPORT OF RECORD COMMITTEE.

This, the fourth Annual report of the Record Committee, shows amount of money received for the different Record Associations from January 1, 1908, to December 31, 1908. The total number of registrations and transfers for each breed is given and how distributed by provinces.

The financial statement of the Record Committee shows amount of money received from the different associations and government grant for running expenses and how these monies were disbursed.

An individual statement for each association shows money received for running expenses, how expended, and after adjustment if anything is due from the association or if the association owes the Record Committee.

There is also a comparative statement for the three years 1906, 1907 and 1908, showing number of registrations and transfers made for each association and the amount of money received and deposited.

It may be well to state for the information of those who may not be familiar with the working of the Record Office that all monies received are deposited daily in the Imperial bank to the credit of the association for which they are sent. The running expenses are provided for by a monthly remittance from the different associations and from government grant for non-paying associations. These remittances and grant are deposited to the credit of the Record Committee, and salaries are paid by cheque of treasurer of Record Committee, countersigned by the chairman.

From the time of organization of records of thoroughbred and French-Canadian horses; sheep; Aberdeen-Angus, Galloway, Jersey, French-Canadian and Guernsey cattle to December 31, 1907, the cost of conducting these records had been borne by the Record Committee, the money being taken from a grant given by the Department of Agriculture for the purpose of assisting weak associations in process of organization.

From January 1, 1908, these records were placed on the list of self-sustaining records, the only assistance being given them is as shown in the different financial statements and is the same proportionately as is given all self-sustaining associations in the National Record system. The grants to associations combined are equal to one half the salary of the accountant; in other words, the Record Associations pay half the salary of the Accountant, the other half is paid out of the government grant. The total cost of conducting the Red Polled, Pony, Belgian and Percheron records during 1908 has been paid by the Record Committee out of the grant.

FINANCIAL STATEMENT FOR THE YEAR ENDING DECEMBER 31, 1908.

Receipts.

Balance on hand December 31, 1907		$ 617 22
Dominion government grant		4,105 00
Dominion Shorthorn Breeders' Association—		
Levy for salaries, 1908	$3,249 96	
" refunds, 1908	480 00	
		$3,729 96
Canadian Ayrshire Breeders' Association—		
Adjustment of charges, 1907	$ 108 51	
Levy for salaries, 1908	590 00	
" refunds, 1908	88 50	
		787 01

Clydesdale Horse Association of Canada—		
Adjustment of charges, 1907..	$ 462 86	
Levy for salaries, 1908..	1,320 00	
" refunds, 1908..	375 00	
		2,157 86
Canadian Hereford Breeders' Association—		
Levy for salaries, 1908..	$ 249 96	
" refunds, 1908..	40 00	
		289 96
Dominion Swine Breeders' Association—		
Adjustment of charges, 1907..	$ 166 01	
Levy for salaries, 1908..	1,200 00	
" refunds, 1908..	100 00	
		1,466 01
Canadian Hackney Horse Society—		
Adjustment of charges, 1907..	$45 29	
		45 29
Canadian Shire Horse Association—		
Adjustment of charges, 1907..	$25 76	
		25 76
Canadian Aberdeen Angus Association—		
Levy for refunds, 1908..	$63 30	
		63 30
Received for import certificates..		37 00
		$13,324 37

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

Expenditures.

Salaries in Record Office—		
John W. Brant..	$1,767 66	
J. W. Nimmo..	1,500 00	
H. E. Martinette..	1,500 00	
F. M. Wade..	1,200 00	
R. G. T. Hitchman..	1,200 00	
E. J. Bartlett..	633 33	
A. M. Day..	477 33	
I. Larose..	487 50	
I. B. Moodie..	310 50	
F. M. Blow..	108 00	
N. Moodie..	184 00	
W. D. McLennan..	45 00	
E. E. Perry..	90 00	
		$9,503 32
Expenses of Record Committee..		528 50
Dominion Shorthorn Breeders' Association—		
Adjustment of charges, 1907..	$419 18	
Canadian Hereford Breeders' Association—		
Adjustment of charges, 1907..	40 21	
		459 39
Auditing six months, 1907..	$ 75 00	
" Record Committee, 1907..	20 00	
" 1908..	115 00	
		210 00
Printing..		95 00
Refund of excessive fees..		1,195 72
Petty expenses..		26 54
Balance on hand December 31, 1908..		1,275 90
		$13,324 37

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

DOMINION SWINE BREEDERS' ASSOCIATION.

REGISTRATIONS, TRANSFERS, &C., 1908.

Registrations..	4,435
Transfers..	459
Dup. and New Certificates..	35
Memberships Rec..	375

DISTRIBUTION BY PROVINCES.

——	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Ontario	2,131	191	12	142
Manitoba	555	77	8	63
Saskatchewan	299	49	4	45
Alberta	238	35	5	32
British Columbia	99	5	....	7
Quebec	859	81	5	63
New Brunswick	79	3	....	9
Nova Scotia	86	3	....	4
Prince Edward Island	77	15	....	9
United States	12	....	1	1

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Dominion Swine Breeders' Associaton.
January 1 to December 31, 1908.

For registrations and memberships $3,422 00

RECEIPTS AND EXPENDITURES FOR CONDUCTING SWINE RECORD.

Receipts.

Received from association to pay salaries, 1908	$1,200 00	
Received from association to pay refunds, 1908	100 00	
Applied from government grant, 1908	157 36	
Balance owing to Record Committee by association	114 83	
		$1,572 19

Expenditures.

Paid salaries to December 31, 1908	$1,430 23	
" refunds to December 31, 1908	116 16	
" for audit to December 31, 1908	25 80	
		$1,572 19

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

DOMINION SHEEP BREEDERS' ASSOCIATION.

REGISTRATIONS, TRANSFERS, &C., 1908.

Registrations	2,060
Transfers	190
Dup. and New Certificates	13
Memberships Rec	196

DISTRIBUTION BY PROVINCES.

——	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Ontario	1,021	77	5	62
Manitoba	34	2	....	4
Saskatchewan	19	....	....	2
Alberta	92	4	....	
British Columbia	60	9	....	13
Quebec	784	97	8	105
New Brunswick	24	....	....	7
Nova Scotia	23	....	....	2
Prince Edward Island	3	1	....	1

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Dominion Sheep Breeders' Association.
January 1 to December 31, 1908.

For registrations and memberships	$1,314 84

Receipts and Expenditures for Conducting Sheep Record.

Receipts.

Applied from government grant, 1908	$108 66	
Balance owing to Record Committee by association	503 68	
		$612 34

Expenditures.

Paid salaries to December 31, 1908	$525 78	
" refunds to December 31, 1908	74 72	
" for audit to December 31, 1908	11 84	
		$612 34

(Sgd.) John W. Brant, Treasurer.

(Sgd.) Geo. L. Blatch, F.C.A., Auditor.

DOMINION SHORTHORN BREEDERS' ASSOCIATION.

Registrations, Transfers, &c., 1908.

Registrations	7,038
Transfers	2,272
Dup. and New Certificates	480
Memberships Rec	1,512

DISTRIBUTION BY PROVINCES.

	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Ontario	4,315	1,251	284	977
Manitoba	1,098	439	81	247
Saskatchewan	387	158	44	93
Alberta	635	238	55	103
British Columbia	45	20	....	14
Quebec	268	113	13	43
New Brunswick	42	15	....	4
Nova Scotia	107	24	2	16
Prince Edward Island	35	8	....	9
United States	106	6	1	6

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Dominion Shorthorn Breeders' Association.
January 1 to December 31, 1908.

For registration and membership	$10,806 10	
" herd books	26 60	
From W. G. Pettit, balance on hand	100 80	
		$10,932 90

Receipts and Expenditures for Conducting Shorthorn Record.

Receipts.

Received from association to pay salaries, 1908	$3,249 96	
" " " refunds, 1908	480 00	
Applied from government grant, 1908	311 82	
		4,041 78

Expenditures.

Paid salaries to December 31, 1908	$2,813 62	
" refunds to December 31, 1908	378 03	
" for audit, 1908	51 25	
Balance owing to association by Record Committee	798 88	
		4,041 78

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

CANADIAN AYRSHIRE BREEDERS' ASSOCIATION.

REGISTRATIONS, TRANSFERS, &C., 1908.

Registrations	1,653
Transfers	694
Dup. and New Certificates	64
Memberships Rec.	242

DISTRIBUTION BY PROVINCES.

	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Ontario	412	161	16	75
Manitoba	39	21	3	8
Saskatchewan	11	8	....	2
Alberta	12	6	....	3
British Columbia	35	18	3	6
Quebec	1,003	445	39	122
New Brunswick	63	13	2	7
Nova Scotia	33	13	....	8
Prince Edward Island	27	6	1	6
United States	18	3	....	5

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Canadian Ayrshire Breeders' Association. January 1 to December 31, 1908.

For registration and memberships	$2,687 93	
" herd books	8 00	
		$2,695 93

RECEIPTS AND EXPENDITURES FOR CONDUCTING AYRSHIRE RECORD.

Receipts.

Received from association to pay salaries, 1908	$590 00	
" " " refunds, 1908	88 50	
Applied from government grant, 1908	76 91	
Balance owing to Record Committee by association	36 25	
		$791 66

Expenditures.

Paid salaries to December 31, 1908	$698 57	
" refunds to December 31, 1908	80 48	
" for audit to December 31, 1908	12 61	
		$791 66

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

CANADIAN HEREFORD BREEDERS' ASSOCIATION.

REGISTRATIONS, TRANSFERS, &c., 1908.

Registrations..	901
Transfers..	277
Dup. and New Certificates..	33
Memberships Rec..	100

DISTRIBUTION BY PROVINCES.

——	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Ontario..	311	110	6	46
Manitoba..	175	65	20	20
Saskatchewan..	53	13	1	7
Alberta..	286	36	1	20
British Columbia..	6	15	5	1
Quebec..	7	14	....	
Nova Scotia..	4	2	....	1
United States..	59	22	....	5

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Canadian Hereford Breeders' Association.
January 1 to December 31, 1908.

For registrations and memberships..	$931 35	
" herd books..	2 00	
		$933 35

RECEIPTS AND EXPENDITURES FOR CONDUCTING HEREFORD RECORD.

Receipts.

Received from association to pay salaries, 1908..	$249 96	
" " " refunds, 1908..	40 00	
Applied from government grant, 1908..	38 63	
Balance owing to Record Committee by association..	70 61	
		$399 20

Expenditures.

Paid salaries to December 31, 1908..	$350 35	
" refunds to December 31, 1908..	42 54	
" audit to December 31, 1908..	6 31	
		$399 20

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

CANADIAN JERSEY CATTLE CLUB.

REGISTRATIONS, TRANSFERS, &c., 1908.

Registrations..	223
Transfers..	92
Dup. and New Certificates..	4
Memberships Rec..	51

DISTRIBUTION BY PROVINCES.

——	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Ontario..	150	65	2	29
Manitoba..	12	9	....	7
Saskatchewan..	1	7	....	
Alberta..	13	3	....	1
British Columbia..	1	....	....	
Quebec..	8	1	....	3
New Brunswick..	29	3	2	6
Nova Scotia..	....	2	....	2
Prince Edward Island..	9	2	....	3

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Canadian Jersey Cattle Club. January 1 to December 31, 1908.

For registrations and memberships..	$304 80

RECEIPTS AND EXPENDITURES FOR CONDUCTING JERSEY RECORD.

Receipts.

Applied from government grant, 1908..	$ 10 18	
Balance owing Record Committee by association..	109 55	
		$119 73

Expenditures.

Paid salaries to December 31, 1908..	$ 92 07	
" refunds to Deeember 31, 1908..	25 99	
" audit to Deeember 31, 1908..	1 67	
		$119 73

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

NORTH AMERICAN GALLOWAY ASSOCIATION.

REGISTRATIONS, TRANSFERS, &C., 1908.

Registrations..	96
Transfers..	15
Dup. and New Certificates..	
Memberships Rec..	7

DISTRIBUTION BY PROVINCES.

——	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Ontario..	7	....	....	1
Manitoba..	50	14	....	2
Saskatchewan..	7	....	....	1
Alberta..	32	1	....	3

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the North American Galloway Association. January 1 to December 31, 1908.

For registrations and memberships..	$119 15

RECEIPTS AND EXPENDITURES FOR CONDUCTING THE GALLOWAY RECORD.

Receipts.

Applied from government grant, 1908..	$ 3 54	
Balanee owing to Record Committee by association..	34 30	
		$37 84
Paid salaries to December 31, 1908..	$32 20	
" refunds to December 31, 1908..	5 06	
For audit to Deeember 31, 1908..	58	
		$37 84

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

CANADIAN GUERNSEY BREEDERS' ASSOCIATION.

REGISTRATIONS, TRANSFERS, &c., 1908.

Registrations	73
Transfers	5
Dup. and New Certificates	3
Memberships Rec	11

DISTRIBUTION BY PROVINCES.

——	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Ontario	5	3	....	2
Quebec	7	....	....	4
New Brunswick	7	1	....	1
Nova Scotia	40	1	3	4
Prince Edward Island	14	....	....	

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Canadian Guernsey Breeders' Association.
January 1 to December 31, 1908.

For registrations and memberships	$68 25

RECEIPTS AND EXPENDITURES FOR THE CONDUCTING OF THE GUERNSEY RECORD.

Receipts.

Applied from government grant, 1908	$ 2 58	
Balance owing to Record Committee by association	24 38	
		$26 96

Expenditures.

Paid salaries to December 31, 1908	$23 48	
" refunds to December 31, 1908	3 06	
" audit to December 31, 1908	42	
		$26 96

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

CANADIAN ABERDEEN ANGUS ASSOCIATION.

REGISTRATIONS, TRANSFERS, &c., 1908.

Registrations	820
Transfers	94
Dup. and New Certificates	22
Memberships Rec	67

DISTRIBUTION BY PROVINCES.

——	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Ontario	167	52	21	21
Manitoba	410	14	1	26
Saskatchewan	76	4	....	6
Alberta	150	24	....	11
Quebec	4	....	....	2
Prince Edward Island	12	....	....	1
United States	1	....	....	

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Canadian Aberdeen Angus Association.
January 1 to December 31, 1908.

For registrations and memberships	$561 35	
" herd books	2 00	
		$563 35

Receipts and Expenditures for Conducting Aberdeen Angus Record.

Receipts.

Applied from government grant, 1908	$ 25 39	
" from association to pay refunds	63 30	
Balance owing Record Committee by association	213 83	
		$302 52

Expenditures.

Paid salaries to December 31, 1908	$229 95	
" refunds to December 31, 1908	68 41	
" for audit to December 31, 1908	4 16	
		$302 52

(Sgd.) John W. Brant, Treasurer.

(Sgd.) Geo. L. Blatch, F.C.A., Auditor.

FRENCH CANADIAN CATTLE BREEDERS' ASSOCIATION.

Registrations, Transfers, &c., 1908.

Registrations	324
Transfers	51
Dup. and New Certificates	8
Memberships Rec	38

DISTRIBUTION BY PROVINCES.

	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Ontario	3	2	1	1
Manitoba	4	....	....	1
Quebec	317	49	7	36

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the French Canadian Cattle Breeders' Association.
January 1 to December 31, 1908.

For registrations and memberships	$174 75

Receipts and Expenditures for Conducting French Canadian Cattle Record.

Receipts.

Applied from government grant, 1908	$ 48 82	
Balance owing to Record Committee by association	98 85	
		$147 67

Paid salaries to December 31, 1908	$128 90	
" refunds to December 31, 1908	16 77	
" for audit to December 31, 1908	2 00	
		$147 67

(Sgd.) John W. Brant, Treasurer.

(Sgd.) Geo. L. Blatch, F.C.A., Auditor.

CANADIAN RED POLLED ASSOCIATION.

REGISTRATIONS, TRANSFERS, &C., 1908.

Registrations	172
Transfers	5
Dup. and New Certificates	1
Memberships Rec.	2

DISTRIBUTION BY PROVINCES.

	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Manitoba	131	3	....	1
Saskatchewan	35	....	1	1
Alberta	6	2	....	

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Canadian Red Polled Association.
January 1 to December 31, 1908.

For registrations and memberships	$40 50

RECEIPTS AND EXPENDITURES FOR CONDUCTING RED POLLED RECORD.

Receipts.

Applied from government grant, 1908	$49 62	
Balance owing to Record Committee by association	1 06	
		$50 68

Expenditures.

Paid salaries to December 31, 1908	$48 74	
" refunds to December 31, 1908	1 06	
" audit to December 31, 1908	88	
		$50 68

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

CLYDESDALE HORSE ASSOCIATION OF CANADA.

REGISTRATIONS, TRANSFERS, &C., 1908.

Registrations	2,665
Transfers	560
Dup. and New Certificates	53
Memberships Rec.	586

DISTRIBUTION BY PROVINCES.

	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Ontario	1,454	251	35	373
Manitoba	321	127	11	86
Saskatchewan	340	71	2	52
Alberta	314	66	1	35
British Columbia	62	17	....	12
Quebec	133	23	2	20
New Brunswick	12	....	1	
Nova Scotia	15	1	1	3
Prince Edward Island	5	3	....	2
United States	9	1	....	3

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Clydesdale Horse Association of Canada.
January 1 to December 31, 1908.

For registrations and memberships	$4,551 19	
" stud books	24 00	
		$4,575 19

Receipts.

Received from association to pay salaries, 1908	$1,320 00	
" " " refunds, 1908	375 00	
Applied from government grant, 1908	105 00	
		$1,800 00

Expenditures.

Paid salaries to December 31, 1908	$1,105 20	
" refunds to December 31, 1908	312 49	
" for audit, 1908	17 28	
Balance owing to association by Record Committee	365 03	
		$1,800 00

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

CANADIAN SHIRE HORSE ASSOCIATION.

REGISTRATIONS, TRANSFERS, &C., 1908.

Registrations	124
Transfers	9
Dup. and New Certificates	3
Memberships Rec	17

DISTRIBUTION BY PROVINCES

	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Ontario	97	3	2	12
Manitoba	17	4	1	4
Saskatchewan	3	2	....	
Alberta	3	....	....	
United States	4	....	....	1

Cash received at the National Record Office and deposited in the Imerial Bank to the credit of the Shire Horse Association. January 1 to December 31, 1908.

For registrations and memberships	$192 50	
" Stud Book	2 00	
		$194 50

RECEIPTS AND EXPENDITURES FOR CONDUCTING THE SHIRE RECORD.

Receipts.

Applied from government grant, 1908	$ 3 96	
Balance owing to Record Committee by association	61 16	
		$65 12

Expenditures.

Paid salaries to December 31, 1908	$41 74	
" refunds to December 31, 1908	22 73	
" audit to December 31, 1908	65	
		$65 12

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

CANADIAN HACKNEY HORSE SOCIETY.

REGISTRATIONS, TRANSFERS, &C., 1908.

Registrations	112
Transfers	15
Dup. and New Certificates	3
Memberships Rec.	21

DISTRIBUTION BY PROVINCES.

	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Ontario	53	3	1	8
Manitoba	8	3	....	1
Saskatchewan	5	2	....	3
Alberta	5	3	....	
British Columbia	8	2	....	4
Quebec	15	....	....	2
Nova Scotia	2	2	1	
United States	16	....	1	3

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Canadian Hackney Horse Society.
January 1 to December 31, 1908.

For registrations and memberships	$340 85	
" stud book	2 00	
		$342 85

RECEIPTS AND EXPENDITURES FOR CONDUCTING HACKNEY RECORD.

Receipts.

Applied from government grant, 1908	$ 4 14	
Balance owing to Record Committee by Society	47 39	
		$51 53

Expenditures.

Paid salaries to December 31, 1908	$43 74	
" refunds to December 31, 1908	7 11	
" for audit to December 31, 1908	68	
		$51 53

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

FRENCH CANADIAN HORSE BREEDERS' ASSOCIATION.

REGISTRATIONS, TRANSFERS, &C., 1908.

Registrations	246
Transfers	8
Dup. and New Certificates	....
Memberships Rec.	17

DISTRIBUTION BY PROVINCES.

	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Quebec	242	8	....	16
United States	4	....	....	1

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the French Canadian Horse Breeders' Association. January 1 to December 31, 1908.

For registration and memberships.. .. .. $237 69

RECEIPTS AND EXPENDITURES FOR CONDUCTING THE FRENCH CANADIAN HORSE RECORD.

Receipts.

Applied from government grant, 1908..	$ 8 01	
Balance owing to Record Committee by association..	85 94	
		$93 95

Expenditures.

Paid salaries to December 31, 1908..	$84 47	
" refunds to December 31, 1908..	8 17	
" for audit to December 31, 1908..	1 31	
		$93 95

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

CANADIAN PERCHERON HORSE BREEDERS' ASSOCIATION.

REGISTRATIONS, TRANSFERS, &C., 1908.

Registrations..	1,244
Transfers..	6
Dup. and New Certificates..	....
Memberships Rec..	37

DISTRIBUTION BY PROVINCES.

	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Ontario..	195	....	....	11
Manitoba..	157	....	....	6
Saskatchewan..	256	3	....	5
Alberta..	483	2	....	6
British Columbia..	26	....	....	2
Quebec..	29	1	....	5
New Brunswick..	3	....	....	1
United States..	95	....	....	1

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Canadian Percheron Horse Breeders' Association. January 1 to December 31, 1908.

For registrations and memberships.. .. .. $1,176 85

RECEIPTS AND EXPENDITURES FOR CONDUCTING THE PERCHERON RECORD.

Receipts.

Applied from government grant, 1908..	$455 57	
Balance owing to Record Committee by association..	22 12	
		$477 69

Expenditures.

Paid salaries to December 31, 1908..	449 07	
" refunds to December 31, 1908..	22 12	
" audit to December 31, 1908..	6 50	
		$477 69

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

CANADIAN BELGIAN DRAFTHORSE BREEDERS' ASSOCIATION.

REGISTRATIONS, TRANSFERS, &c., 1908.

Registrations	16
Transfers	....
Dup. and New Certificates	....
Memberships Rec.	3

DISTRIBUTION BY PROVINCES.

—	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Alberta	1	....	....	1
Quebec	14	....	....	1
United States	1	....	....	1

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Canadian Belgian Draft Horse Breeders' Association. Jannary 1 to December 31, 1908.

For registrations and memberships	$80 00

RECEIPTS AND EXPENDITURES FOR CONDUCTING THE BELGIAN DRAFT RECORD.

Receipts.

Applied from government grant, 1908	$5 46	
Balance owing to Record Committee by association	3 02	
		$8 48

Expenditures.

Paid salaries to December 31, 1908	$5 38	
" refunds to December 31, 1908	3 02	
" for Audit to December 31, 1908	8	
		$8 48

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor

CANADIAN THOROUGHBRED HORSE SOCIETY.

REGISTRATIONS, TRANSFERS, &c., 1908.

Registrations	139
Transfers	....
Dup. and New Certificates	1
Memberships Rec.	24

DISTRIBUTION BY PROVINCES.

—	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Ontario	79	....	....	21
Manitoba	27	....	....	1
Saskatchewan	2	....	....	2
Alberta	4	....	....	
British Columbia	3	....	....	
Quebec	24	....	1	

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Canadian Thoroughbred Horse Society.
January 1 to December 31, 1908.

For registrations and memberships.. .. .. $262 40

RECEIPTS AND EXPENDITURES FOR CONDUCTING THOROUGHBRED RECORD.

Receipts.

Applied from government grant, 1908..	$ 4 47	
Balance owing to Record Committee by society..	45 83	
		$50 30

Expenditures.

Paid salaries to December 31, 1908..	$47 13	
" refunds to December 31, 1908..	2 44	
" for audit to December 31, 1908..	73	
		$50 30

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

CANADIAN PONY SOCIETY.

REGISTRATIONS, TRANSFERS, &C., 1908.

Registrations..	19
Transfers..	....
Dup. and New Certificates..	....
Memberships Rec..	3

DISTRIBUTION BY PROVINCES.

——	Registrations.	Transfers.	Dup. and New Certificates.	Memberships Rec.
Ontario..	10	....	....	1
Manitoba..	1	....	....	
Alberta..	36	....	....	1
United States..	2	....	....	1

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Canadian Pony Society. January 1 to December 31, 1908.

For registrations and memberships.. .. .. $64 20

RECEIPTS AND EXPENDITURES FOR CONDUCTING THE PONY RECORD.

Receipts.

Applied from government grant, 1908..	$11 54	
Balance owing to Record Committee by society..	5 36	
		$16 90

Expenditures.

Paid salaries to December 31, 1908..	$11 29	
" refunds to December 31, 1908..	5 36	
" for audit to December 31, 1908..	25	
		$16 90

(Sgd.) JOHN W. BRANT, Treasurer.

(Sgd.) GEO. L. BLATCH, F.C.A., Auditor.

COMPARATIVE STATEMENT FOR THE YEARS 1906, 1907, AND 1908, SHOWING PEDIGREE AND TRANSFERS RECORDED AND AMOUNT OF FEES RECEIVED.

Name of Asso'n.	Pedigrees Recorded.			Transfers Recorded.			Money Received.		
	1906	1907	1908	1906	1907	1908	1906	1907	1908
Shorthorn	9653	10253	7038	2626	2804	2272	11859·95	14508·40	10832·10
Ayrshire	2075	2144	1653	651	914	694	2225·92	2797·90	2695·93
Hereford	1066	683	901	345	141	277	836·65	828·45	933·35
Swine	6637	6277	4435	533	594	459	4447·15	4562·93	3422·00
Clydesdale	2418	6117	2665	520	511	560	3281·20	7296·40	4575·19
Hackney	103	132	112	22	55	15	262·90	395·40	342·85
Shire	53	100	124	12	8	9	102·50	165·00	194·50
Thoroughbred	52	6	139	.....	.....	.....	59·00	24·00	262·40
Sheep	1281	3628	2060	100	240	190	450·25	1234·95	1314·84
Aberdeen Angus	1274	1106	820	40	84	94	268·75	341·60	563·35
Galloway	81	103	96	7	4	15	68·25	56·25	119·15
Jerseys	134	326	223	6	27	92	135·25	334·85	304·80
Red Polled	353	36	172	.....	2	5	17·75	28·00	40·50
Guernsey	33	38	73	5	4	5	25·25	47·50	68·25
Canadian Cattle	667	576	324	22	42	51	134·55	135·50	174·75
Canadian Horses	84	474	246	13	3	8	101·00	228·50	237·60
Total	25964	31999	21081	4902	5433	4746	24276·27	32985·63	26081·56

DISTRIBUTION OF SALARIES, 1908.

	Shrothorn Ass'n.	Ayrshire Ass'n.	Hereford Ass'n.	Clydesdale Ass'n.	Hackney Society.	Shire Ass'n.	Thorobred Society.	Swine Ass'n.	Sheep Ass'n.	Aberdeen Angus Ass'n.	Galloway Ass'n.	Jersey Club.	Guernsey Ass'n.	French Can. Horse Ass'n.	French Can. Cattle Ass'n.	Government Grant.	Total Salary.
John W. Brant	311·82	76·91	38·63	105·00	4·11	3·96	4·17	157·36	72·19	25·39	3·54	10·18	2·58	8·01	12·22	931·26	1767·66
J. W. Nimmo	.....	360·65	180·65	.....	....	.....	.....	738·95	.....	118·40	16·65	47·35	12·15	.....	.....	25·20	1500·00
H. E. Martinette	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	61·24	56·85	1381·91	1500·00
F. M. Wade	.....	.....	.....	800·33	31·72	30·25	34·16	.....	.....	.....	.....	.....	.....	.....	.....	203·54	1200·00
R. G. T. Hitchman	1200·00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1200·00
E. J. Bartlett	224·00	55·21	27·70	75·00	2·98	2·84	3·21	112·90	51·32	18·23	2·51	7·31	1·85	5·74	8·77	33·73	633·33
A. M. Day	.....	114·76	57·64	.....	.....	.....	.....	234·75	.....	37·88	5·28	15·18	3·85	.....	.....	7·99	477·33
I. Larose	58·23	14·13	7·10	19·87	·76	·73	·82	28·91	293·61	4·66	·65	1·87	·47	1·47	2·24	51·98	487·50
I. B. Moodie	280·75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	29·75	310·50
N. Moodie	181·00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	184·00
F. M. Blow	108·00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	108·00
E. E. Perry	90·00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	90·00
W. D. McLellan	45·00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45·00
Total charged to Association	2501·80	621·66	311·72	1000·20	39·60	37·78	42·66	1272·87	417·12	201·56	28·66	81·89	20·90	76·40	80·08	2765·36	9503·32

NOTE. $1341·41 of H. E. Martinette's salary was paid to him as translator. All salaries in connection with Red Poll, Percheron, Belgian and Pony records were paid out of Government Grant.

Volumes of Record composed of pedigrees recorded up to December 31, 1908, have been issued as follows: Shorthorn Volume 25, Swine Breeders' Record Volume 19, Ayrshire Herd Book Volume 17, Hereford Herd Book Volume 5, Clydesdale Stud Book Volume 16, French-Canadian Cattle Herd Book Volume 1.

The Canadian Percheron Record and the Canadian Belgian Draft Record are now fully established, the difficulty of obtaining the Old Country Stud Books experienced when the Records were first formed and which was referred to in the last Annual Report has been overcome through the courtesy of Mr. Geo. W. Stubblefield, Chicago, Secretary of the American Percheron Registry Association, who procured the French Percheron Books, and Mr. H. Ketels, the Belgian-Consul General at Ottawa, who obtained the Belgian Stud Books. These gentlemen went to a great deal of personal trouble in the matter and the Record Committee wish to place their appreciation on record.

During the year new Records have been opened for Shetland, Welsh, Hackney, New Forest, Exmoor and Polo and Riding Ponies and for Suffolk, Cheviot and Highland Blackface Sheep.

In accordance with the resolution passed at the last Annual Meeting of the Record Board regarding the free admission of animals for breeding purposes, the Minister of Agriculture kindly made representations to the Minister of Customs resulting in the passing of an Order-in-Council by which animals imported free of duty must be recorded in the Canadian Record for the breed, providing a Canadian Record exists and Canadian Certificates presented to the Collector of Customs at the Port of entry. In the case of breeds for which there are no Canadian Records, animals are admitted on presentation of Import Certificates issued by the National Record Office, providing such animals are recorded in the Record of the Country of the origin of the breed, and such foreign record is recognized as reliable by the Record Committee. The regulations having been in force since July 1st, 1908, and not being readily understood by all, arrangements have been made to have them simplified and in future the importer must in all cases present to the Collector of Customs an Import Certificate.

The regulations are already having a beneficial effect, undesirable animals being refused free Custom entry as well as animals which are not eligible for Canadian registration. The Committee wishes to point out to intending importers that it is advisable before purchasing animals in a foreign country, to ascertain if they are eligible for entry in the Canadian Records. This is especially advisable in the case of Percheron horses; in addition to the Stud Book of the Société Hippique Percheronne de France the only other Record recognized is the Record of the Percheron Society of America, Geo. W. Stubblefield, Secretary. Information regarding eligibility can always be procured by sending a description of the breeding of an animal to the National Record Office, Ottawa. It would also be well if users of stallions demanded production of Canadian Certificates of Registration, thereby avoiding trouble in the recording of progeny.

To secure the reduced transportation rates over the principal Canadian railways for animals for breeding purposes, recorded in the Canadian Records, it is now necessary to present to the Railway agent a Canadian Certificate of Registration bearing the Seal of the Department of Agriculture. This arrangement is in accordance with the repeated requests of the railway authorities for a uniform certificate of registration. In the case of imported animals of a breed for which there is no Canadian Record but which are recorded in a recognized Foreign Record, an arrangement has been made for transportation at reduced rates from the point of entry into Canada to destination on presentation of a transportation certificate to the railway agent. This certificate is issued by the National Record Office in connection with Import Certificate and is taken up by the railway agent.

Cases of alleged false registration of pedigrees have been investigated and it has

been found necessary to cancel a number of entries. As occasion arises, investigation will be made, and if circumstances warrant prosecutions will follow.

In conclusion the Committee, for valuable assistance rendered, desires to thank the Minister of Agriculture, the Minister of Customs, the Live Stock Commissioner, the Commissioner of Customs and other officials of the Departments of Agriculture and Customs.

All of which is respectfully submitted,—

ROBERT MILLER, Chairman.
WM. SMITH, representing Heavy Horses.
ROBERT GRAHAM, Light Horses.
JOHN DRYDEN, Beef Cattle.
ROBERT NESS, Dairy Cattle.
J. E. BRETHOUR, Swine.
J. M. GARDHOUSE, Sheep.
JNO. W. BRANT, Secretary.

MEMBERS OF RECORD BOARD, 1908.

Representing Clydesdale Associations:—Robert Graham, Bedford Park, Ont.; William Smith, Columbus, Ont.; John Bright, Myrtle Station, Ont.; Robert Ness, Howick, Que.

Hackney:—Walter Renfrew, Bedford Park, Ont.; T. A. Graham, Claremont, Ont.

Shorthorn:—John Dryden, Toronto, Ont.; J. G. Barron, Carberry, Man.; Robert Miller, Stouffville, Ont.; A. W. Smith, Maple Lodge, Ont.; J. M. Gardhouse, Weston, Ont.; T. E. Robson, London, Ont.; W. G. Pettit, Freeman, Ont.

Ayrshire:—Robert Ness, Howick, Que.; W. W. Ballantyne, Stratford, Ont.

Hereford:—R. J. Mackie, Oshawa, Ont.; W. H. Hunter, The Maples, Ont.

Shire.—John Gardhouse, Highfield, Ont.; James Henderson, Belton, Ont.

Thoroughbred:—William Hendrie, Hamilton, Ont.; Jno. J. Dixon, Toronto, Ont.

Pony:—W. J. Stark, Toronto, Ont.; H. J. P. Good, Toronto, Ont.

French-Canadian Cattle.—Arsene Denis, St. Norbert Station, Que.; T. B. Macaulay, Montreal, Que.

French-Canadian Horse:—Robert Ness, Howick, Que.; J. A. Couture, Quebec, Que.

Galloway.—D. McCrae, Guelph, Ont.; Robert Shaw, Brantford, Ont.

Sheep:—J. M. Gardhouse, Weston, Ont.; R. H. Harding, Thorndale, Ont.

Red Polled:—H. V. Clendenning, Harding, Man.; Dr. A. W. Bell, Winnipeg, Man.

Swine:—Joseph Featherstone, Streetsville, Ont.; J. E. Brethour, Burford, Ont.

Jersey:—R. J. Fleming, Toronto, Ont.; R. Reid, Berlin, Ont.

Guernsey:—H. W. Corning, Cheggogin, N.S.; J. F. Roper, Charlottetown, P.E.I. P.E.I.

Aberdeen-Angus:—Samuel Martin, Rounthwaite, Man.; James Bowman, Guelph, Ont.

Percheron:—R. P. Stanley, Moosomin, Sask.; George Lane, Calgary, Alta.

Belgian:—Paul Tourigny, Quebec, Que.; Arthur Paquette, Quebec, Que.

RESOLUTION.

Respecting the Free Admission of Animals for the Improvement of Stock, passed at Annual Meeting of the Record Board, May, 1908, and on which the present Customs Regulations are based.

That in view of the advisability of having, as far as possible, all pure bred animals in the Dominion of Canada registered in the National Records, and for the protection of importers of pure bred stock, this Board recommends to the Minister

of Agriculture that in the case of importations for the Improvement of Stock, free Customs entry should be granted only to animals owned and imported by British subjects and on the production of the Certificate of Registration of such animals in one of the Books of Record mentioned in the following list, which list shall be subject to alteration from time to time by authority of the Record Committee. In the case of animals accompanied by Certificates of Registration in any of the Foreign Books of Record contained in this list and for which no corresponding Canadian Record exists, the said certificates to be forwarded to the Accountant of the Canadian National Live Stock Records, who shall examine the same, and on finding them satisfactory, shall attach thereto an Import Certificate bearing his signature and the Seal of the Department of Agriculture.

Regulations based on the above came into force on July 1, 1908, and in February, 1909, were amended as follows, effective March 1, 1909.

CONSOLIDATED AND AMENDED REGULATIONS RESPECTING FREE ENTRY OF ANIMALS FOR THE IMPROVEMENT OF STOCK—IN EFFECT MARCH 1, 1909.

Memo. No. 1480-B and Memo. No. 1482-B are hereby cancelled and the following regulations are substituted therefor, in effect March 1, 1909.

Under Order in Council of May 21, 1908, His Excellency the Governor in Council is pleased to order that on and after the 1st day of July, 1908, the regulations established by Order in Council of the 8th November, 1887, respecting "Animals for the improvement of stock," shall be and the same are hereby revoked, and the following regulations prescribed in respect of the free entry under the Customs Tariff of horses, cattle, sheep, goats, asses and swine, for the improvement of stock:—

REGULATIONS.

1. No animal imported for the improvement of stock shall be admitted free of duty unless the importer is domiciled in Canada or is a British subject and furnishes a certificate of the record and pedigree in a list of registers designated from time to time by the Minister of Customs, showing that the animal is pure bred and has been admitted to full registry in a book of record established for that breed.

An affidavit by the owner, agent or importer that such animal is the identical animal described in said certificate of record and pedigree must be presented.

2. In case such Certificate is not at hand at the time of the arrival of the animals, the entry for duty may be accepted subject to the refund of the duty upon production of the requisite certificates and proofs in due form satisfactory to the Collector, within one year from the time of entry.

3. The form of Certificate of Record and pedigree to be accepted for the free importation of animals for the improvement of stock, and the Customs procedure in connection therewith shall be subject to the directions of the Minister of Customs.

INSTRUCTIONS.

(*a*) The following is a list of Registers designated by the Minister of Customs, in one of which animals must be registered as pure bred prior to admission free of duty for the improvement of stock, viz.:—

For Holstein-Friesian Cattle.—The Holstein-Friesian Association of Canada, St. George, Ont.

For Horses, Cattle, Sheep, Goats, Asses and Swine (but not including Holstein-Friesian Cattle)—Canadian National Records, Ottawa, Canada, also any Register certified by the Accountant of the Canadian National Records as a recognized book of record in the country of the origin of the breed.

(*b*) An Import form of certificate, to be delivered to the Collector of Customs before free entry of animals for improvement of stock is allowed, shall be in one of the forms following, viz.:—

For Holstein-Friesian Cattle:

IMPORT CERTIFICATE.

HOLSTEIN-FRIESIAN ASSOCIATION OF CANADA.

FORM 1.

I hereby certify that the animal (name) . . . . . (number) . . . . . is pure bred and is registered in the Holstein-Friesian Herd Book of Canada, the Canadian Book of Record for Holstein-Friesian Cattle.

(Signature) . . . . . *Secretary.*
Holstein-Friesian Breeders' Association of Canada.

St. George, Ontario . . . . . 19. . .

For Live Stock other than Holstein-Friesian Cattle:

IMPORT CERTIFICATE.

CANADIAN NATIONAL RECORDS.

FORM 2.

I hereby certify that the animal (name) . . . . . (number) . . . . . is pure bred and is registered in the (state book of record) . . . . . the Canadian Book of Record for (state breed) . . . . .

(Signature) . . . . . *Accountant.*
Canadian National Records.

Ottawa, Canada, ... 19. . .

IMPORT CERTIFICATE.

CANADIAN NATIONAL RECORDS.

FORM 2-A.

I hereby certify that the animal (name) . . . . . (number) . . . . . is registered in the (state book of record) . . . . . the recognized book of record in the country of the origin of the breed of (state breed) . . . . .

(Signature) . . . . . *Accountant.*
Canadian National Records.

Ottawa, Canada, ... 19. . .

(*c*) The Import Certificate shall be attached to the free Customs entry for transmission by the Collector to the Department of Customs, Ottawa.

The said Certificate shall be marked in each case with the Customs entry number and the office dating stamp.

The Collector of Customs shall not demand or accept any certificate as to pedigree, other than in one of the 'Import Certificate' forms herein prescribed.

(*d*) Animals may be shipped in bond from the Canadian frontier port to the Customs port of destination subject to quarantine requirements.

(*e*) Import Certificates for Holstein-Friesian Cattle are issued by the Secretary of the Holstein-Friesian Association of Canada, St. George, Ontario.

(*f*) Import Certificates for live stock other than Holstein-Friesian Cattle may be procured on application to 'Accountant,' Canadian National Records, Ottawa, from whom there may also be obtained a list of Canadian Records, lists of recognized foreign records, and other information concerning the importation of pure bred animals for the improvement of stock.

(SGD.) JOHN McDOUGALD,
Commissioner of Customs.

THE REGULATIONS EXPLAINED.

To obtain free customs entry of an animal of a breed for which there is a Canadian record (otber than Holstein-Friesian cattle), the importer must forward to the Accountant, Canadian National Records, Ottawa, the foreign certificates of registration accompanied by the necessary fees for registration as specified elsewhere in this report, and in addition for import certificate a fee of 50 cents for horses and cattle and 10 cents for swine and sheep.

The import certificate will be forwarded to pass customs at the point of entry into Canada or elsewhere as the importer may direct. In no case should the importer present any certificate to the custom authorities other than the import certificate.

Importers should be careful to observe the veterinary requirements in connection with the importation of animals. Full information may be procured from the Veterinary Director General, Ottawa, Canada.

CANADIAN BOOKS OF RECORD.

HORSES.

Name of Breed.	Book of Record.	Name of Association.
Clydesdale	Clydesdale Stud Book of Canada.	Clydesdale Horse Association of Canada.
Hackney	Canadian Hackney Stud Book	Canadian Hackney Horse Society.
Shire	Canadian Shire Horse Stud Book.	Canadian Shire Horse Association.
Percheron	Canadian Percheron Stud Book	Canadian Percheron Horse Breeders Association.
Thoroughbred	Canadian Thoroughbred Stud Book	Canadian Thoroughbred Horse Society.
Belgian Draft	Canadian Belgian Draft Stud Book	Canadian Belgian Draft Horse Breeders' Association.
French Canadian	French Canadian Horse Breeders' Stud Book	French Canadian Horse Breeders' Association of Canada.
Shetland, Welsh, New Forest, Polo and Riding, Exmoor and Hackney Ponies	Canadian Pony Stud Book	Canadian Pony Society.

CATTLE.

Shorthorn	Dominion Shorthorn Herd Book	Dominion Shorthorn Breeders' Association.
Ayrshire	Canadian Ayrshire Herd Book	Canadian Ayrshire Breeders' Association.
Hereford	Canadian Hereford Herd Book	Canadian Hereford Breeders' Association.
Jersey	Canadian Jersey Cattle Club Record	Canadian Jersey Cattle Club.
Galloway	North America Galloway Herd Book	North America Galloway Association.
Aberdeen-Angus	Canadian Aberdeen-Angus Association's Record	Canadian Aberdeen-Angus Association.
Guernsey	Canadian Guernsey Herd Book	Canadian Guernsey Breeders' Association.
French Canadian	French Canadian Cattle Breeders' Herd Book	French Canadian Cattle Breeders' Association of Canada.
Red Polled	Canadian Red Polled Herd Book.	Canadian Red Polled Association.
Holstein-Friesian	Holstein-Friesian Herd Book of Canada	Holstein-Friesian Association of Canada, St. George.

SWINE.

Yorkshire, Berkshire, Tamworth, Chester White, Poland China, Duroc Jersey, Essex	Dominion Swine Breeders' Record	Dominion Swine Breeders' Association.

SHEEP.

Shropshire, Leicester, Oxford Down, Cotswold, Lincoln, Dorset, Hampshire, Southdown, Suffolk, Cheviot, Blackface	Canadian National Records	Dominion Sheep Breeders' Association.

FOREIGN BOOKS OF RECORD.

IMPORT CERTIFICATES FOR ANIMALS OF A BREED FOR WHICH THERE IS NO CANADIAN RECORD.

In order to secure the free customs entry for an animal of a breed for which there is no Canadian record but which is recorded in a foreign record recognized as reliable, the importer must forward to the Accountant, Canadian National Records, the foreign certificate of registration accompanied by fees as follows: For horses, cattle or asses, $1 each; for sheep, swine or goats, 50c. each. The import certificate will be forwarded to pass the customs at the point of entry into Canada or elsewhere as the importer may direct.

In no case should the importer present any certificate to the customs authorities other than the import certificate.

Importers should be careful to observe the veterinary requirements in connection with the importation of animals. Full information may be procured from the Veterinary Director General, Ottawa.

Recognized Foreign Records.

Horses.

Name of Breed.	Book of Record.	Name of Association.
Suffolk	Suffolk Stud Book	Suffolk Horse Society, Suffolk, England.
Cleveland Bay	Cleveland Bay Stud Book	Cleveland Bay Horse Society of Great Britain and Ireland, Nunthrope, R. S. O., England.
Yorkshire Coach	Yorkshire Coach Horse Stud Book	Yorkshire Coach Horse Society of Great Britain and Ireland, Bolton Perdy, R. S. O., England.
Morgan	American Morgan Register	American Morgan Register Association, Middlebury, Vt.
Saddle Horse	American Saddle Horse Register	American Saddle Horse Breeders' Association, Louisville, Ky.
American Trotter	American Trotting Register	American Trotting Register Association, Chicago, Ill.
French Coach	Le Studbook Francais, Registre des Chevaux de-demi sang	Commission des Studbook des Chevaux de Demi-sang, Paris, France.
German Coach	Ostfriesisches Stutbuch	Landwirthschaftlichen Hauptverein fur Osfriesland, Norden, Germany.
	Stutbuch der Munsterlandisch-Oldenburgischen Geest	Zuchterband des Sudlichen Zuchtgebietes, Oldenburg, Germany.
Oldenburg	Oldenburger Stutbuch	Verband der Zuchter des Oldenburger eleganten schweren Kutschpferdes, Oldenburg, Germany.
Holstein Coach	Gestutbuch der Holsteinischen Marschen	Verband der Pferdezuchter in den Holsteinischen Marschen, Holstein, Germany.
Hunter	Hunter Stud Book	Hunters' Improvement Society, 12 Hanover Square, London, England.

Cattle.

Highland	Highland Herd Book	Highland Cattle Society of Scotland, Inverness, Scotland.
Kerry & Dexter	Kerry & Dexter Herd Book	Kerry & Dexter Herd Book, Dublin, Ireland.
Sussex	Sussex Herd Book	Sussex Herdbook Society, London, England.
Devon	Davies Devon Herd Book	Devon Cattle Breeders' Society, Wiveliscombe, England.
Longhorned Cattle	Longhorned Herd book	Longhorned Cattle Society, Atherstone, England.
Welsh Black Cattle	Welsh Black Cattle Herd Book	Welsh Black Cattle Society, Haverfordwest, Wales.
Polled Durham	American Polled Durham Herd Book	Polled Durham Breeders' Association, Indianapolis, Ind., U.S.
Polled Hereford	National Polled Hereford Herd Book	National Polled Hereford Breeders' Association, Chicago, Ill., U.S.

SWINE.

Name of Breed.	Book of Records.	Name of Association.
Large Black Pig	Large Black Society Herd Book.	Large Black Pig Society, Ipswich, England.
Lincolnshire Curly Coated Pig	Curly Coated Pig Breeders' Herd Book	Lincolnshire Curly Coated Pig Breeders' Association, Thornhayes, England.

SHEEP.

Kent or Romney Marsh	Kent or Romney Marsh Flock Book	Kent or Romney Marsh Sheep Breeders' Association, London, W. C., England
Wensleydale Longwood	Wensleydale Flock Book	Wensleydale Longwool Sheep Breeders' Association, Yorkshire, England.
Wensleydale Bluefaced	Wensleydale Bluefaced Flock Book	Incorporated Wensleydale Bluefaced Sheep Breeders' Association and Flock Book Society, Caperby, England.

GOATS.

Goats	British Goat Society Herd Book.	British Goat Society, Kingston on Thames, England.
Toggenburg	Toggenburg Herd Book	Toggenburg Club, Beefolds, Farnham, England.

ASSES.

Jacks and Jennets	Studbook Mulassier	Société Centrale d'Agriculture des deux Sevres
Jacks and Jennets	Studbook of Jacks & Jennets of Spain	

APPLICATIONS FOR CANADIAN REGISTRATION AND IMPORT CERTIFICATE.

In the case of cattle, sheep and swine from European countries the importer need not make application for registration and import certificate until the animals arrive at quarantine, as the quarantine period allows ample time to secure certificates before having to pass the customs.

In the case of horses from European countries the importer should, if possible, forward his foreign certificates, along with application and fees, on a mail boat sailing before the stock is shipped. Import certificates and Canadian certificates of registration can then be sent to meet the horses on landing. The Canadian certificate is necessary in order to get the reduced railway rates. In the case of late purchases, importers landing horses at Montreal or at St. John, or other Atlantic ports, may mail applications, foreign certificates and fees on landing and then ship in bond subject to quarantine requirements, to the nearest custom house to destination. It must in all cases be definitely stated where import certificates are to be forwarded.

In addition to the foreign certificate of registration, an application made out on

the regular form, supplied by the National Record Office, is required. Fees for registration are indicated elsewhere in this report.

For animals imported in dam certificates of service must be procured from the breeder signed by the owner of the sire at the time of service.

The National Record Office gives special service in issuing certificates urgently needed. The certificates will be mailed to the importer in care of the customs officer at the port of entry or other address indicated.

It is the purpose of the Record Committee to watch carefully the importations of animals for which there are no Canadian records, and when a sufficient number of a breed are being bred in Canada to warrant the opening of a record, steps will be taken to organize a Record Association with the least possible delay.

Canadians wishing to import pure bred animals from the United States, in order to avoid delay and trouble at the port of entry should secure registration of the animals in the Canadian record and import certificate before the animals are shipped.

In the case of swine from the United States, which the present health regulations require to be quarantined, the registration of animals may, if desired, be deferred until after the animals are in quarantine.

It will be observed from paragraph 1 of the regulations that only British subjects or persons domiciled in Canada are entitled to the privilege of free entry of animals for the improvement of stock. This does not apply to settlers who are accorded certain privileges in regard to the bringing in of settlers' effects.

ELIGIBILITY OF ANIMALS FOR CANADIAN RECORDS.

It is important that Canadian importers, before purchasing animals of a breed for which there is a Canadian record, ascertain if they are recorded in the proper foreign record, and if so, if they are eligible for record in Canada. Canadian registration of imported animals will not be made unless proper foreign certificate is presented.

Canadian records, with the exception of those for French-Canadian cattle and French-Canadian horses which are purely Canadian, are for the most part based on the records of the countries of the origin of the breeds, but as the Canadian standard of registration is higher in some cases than the standard in the country of origin, or that of other countries, animals may or may not be eligible for entry in the Canadian records. The following will assist in arriving at the eligibility of an animal. The fees for recording animals in the Canadian records bred in other countries are indicated in each case. (These fees do not in all cases apply to the recording of Canadian bred animals.) In addition to the registration fee, 50c. is charged for import certificate for horses and cattle and 10c. for sheep and swine.

HORSES.

CLYDESDALE.

Animals recorded and numbered in the Clydesdale Stud Book of Great Britain and Ireland are eligible, provided their sires and dams and grand sires and grand dams are also recorded and numbered therein. The breeding of many horses recorded in the Scottish Book does not come up to this standard.

Animals recorded in the American Clydesdale Stud Book, if American bred or descended from imported stock, are eligible, providing their breeding complies with the Canadian standard of registration. Fees to members—animals imported from Great Britain, stallions $3, mares $2. To non-members, stallions $4, mares $3. To members—animals bred in and imported from the United States $1; to non-members $2. An additional fee of $1 is charged for each American bred ancestor and the fees above stated for ancestors imported from Great Britain. Annual membership $2.

HACKNEY.

Stallions full registered and all mares recorded in the English Hackney Stud Book and all animals recorded in the American Hackney Stud Book. Fees to members $2, to non-members $4. An additional fee of $1 is charged for each ancestor recorded to complete pedigrees of animals recorded in the American Stud Book. Annual membership $3.

SHIRES.

All animals recorded in the English Shire Horse Stud Book or in the American Shire Horse Stud Book. Fees to members—animals under three years of age $1, animals over three years of age $2; to non-members—animals under three years of age $2, animals over three years of age $4. An additional fee of $1 is charged for each ancestor recorded to complete pedigrees of animals recorded in the American Stud Book.

PERCHERON.

All animals recorded in the Stud Book Percheron de France or in the American Percheron Stud Book. Fees to members—stallions $3, mares $1; to non-members—stallions $5, mares $2. An additional fee of 50c. is charged for each ancestor recorded to complete pedigrees of animals recorded in the American Percheron Stud Book (Chicago). Annual membership $2.

THOROUGHBRED.

All animals recorded in the General Stud Book (Great Britain), American, French or Australian Stud Books. Fees to members $1, to non-members $2. Annual membership $2.

BELGIAN.

All animals recorded in the Stud Book des Chevaux de Traits Belges or in the American Register of Belgian Draft Horses. Fees to members—stallions $3, mares $1; to non-members—stallions $4, mares $2. An additional fee of 50c. is charged for each ancestor recorded to complete pedigrees of animals recorded in the American Stud Book. Annual membership $2.

SHETLAND PONIES.

All animals recorded in the Shetland Stud Book of Scotland and such animals recorded in the American Shetland Pony Stud Book as trace to ancestors recorded in the Shetland Stud Book of Scotland. Fees to members $1, to non-members $2. Annual membership $2.

WELSH PONIES.

All animals recorded in the Welsh Pony and Cob Stud Book (Great Britain), or in the American Welsh Pony and Cob Stud Book. Fees same as Shetland ponies.

NEW FOREST PONIES.

Animals imported from Great Britain recognized as pure bred. A certificate to this effect must be furnished, signed by the breeder and certified by the Secretary of the Association for the improvement of the breed of New Forest ponies (Great Britain). Fees same as Shetland ponies.

POLO AND RIDING PONIES.

All animals recorded in the Polo Section of the Polo and Riding Pony Stud Book (Great Britain). Fees same as Shetland ponies.

EXMOOR PONIES.

Animals imported from Great Britain bred by reputable breeders. Certificate of breeding signed by breeder must be furnished. Fees same as Shetland ponies.

HACKNEY PONIES.

All stallions full-registered and all mares recorded in the English Hackney Stud Book and all ponies recorded in the American Hackney Stud Book. Fees to members $1, to non-members $2. Annual membership $2.

CATTLE.

SHORTHORN.

Animals recorded or eligible for record in the fortieth or preceding volumes of Coates English Herd Book. Animals recorded in the American Shorthorn Herd Book providing they trace in all their crosses to named ancesters imported from Great Britain. The breeding of such animals, however, must be of the standard required by the rules of entry of the Dominion Shorthorn Breeders' Association. Many animals on record in the American Shorthorn Herd Book are not eligible for entry in the Dominion Shorthorn Herd Book. Fees to members—English animals 75c., American animals 75c.; to non-members—English animals $1.25, American animals $1.25. An additional fee of 50c. is charged for each ancestor recorded to complete pedigrees of animals recorded in the American Herd Book. All crosses back to and including those imported from Great Britain must be recorded. Annual membership $2.

AYRSHIRE.

All animals recorded in the Herd Book of the Ayrshire Cattle Herd Book Society of Great Britain and Ireland. All animals recorded in the American Ayrshire Herd Book. Fees to members—animals bred in Great Britain or Ireland $1, American bred animals $1; to non-members—animals bred in Great Britain or Ireland $2, American bred animals $2. Additional fees as follows are charged for ancestors recorded to complete pedigrees of animals recorded in the American Book. All animals back to and including those imported from Great Britain must be recorded. For ancestors owned by applicant $1, for ancestors not owned by applicant 25c. Annual membership $2.

HEREFORD.

All animals recorded in the English Hereford Herd Book. All animals recorded in the American Hereford Herd Book. Fees to members—animals imported from Great Britain 75c., animals imported from the United States 75c.; to non-members—animals imported from Great Britain $2, animals imported from the United States $2. Additional fees as follows are charged for recording ancestors to complete pedigrees of animals recorded in the American Book. All ancestors back to and including those imported from Great Britain must be recorded. To members resident in Canada 50c. each, to members resident in the United States 75c. each; to all non-members $2 each. Annual membership $2.

JERSEY.

All animals recorded in the Island of Jersey Herd Book. Animals recorded in the English Jersey Herd Book providing they trace in all their crosses to animals recorded in the Island of Jersey Herd Book. Importers of Jerseys from Great Britain or the Island of Jersey must comply with the import regulations of the Canadian

Jersey Cattle Club, which will be supplied on application. Fees to members—animals imported from Great Britain or the Island of Jersey $1, animals bred in the United States and recorded in the American Book 50c.; to non-members—animals imported from Great Britain or the Island of Jersey $1.50, animals bred in the United States and recorded in the American Book $1. Animals bred in the United States not recorded in the American Book—to members $1, to non-members $1.50, if under two years of age, if over two years of age $1.50 and $2 respectively. Annual membership $1.

GALLOWAY.

Animals recorded in the Galloway Herd Book of Great Britain or the American Galloway Herd Book. Fees to members—animals under six months of age 50c., animals over six months of age $1; to non-members—animals under six months of age $1, animals over six months of age $1.50. Annual membership $1.

ABERDEEN-ANGUS.

Animals recorded in the Polled Herd Book (Scotland), or in the American Aberdeen-Angus Herd Book. Fees to members—animals under one year of age $1, animals over one year of age $2; to non-members—animals under one year of age $3, animals over one year of age $5. Annual membership $2.

GUERNSEY.

Animals recorded in the Herd Book of the Royal Guernsey Agricultural Society, the General Herd Book of Guernsey, or in the Herd Book of the English Guernsey Cattle Club Herd Register. Animals recorded in other than the Island of Guernsey Record must trace in all their crosses to animals imported from the island. Fees to members $1, to non-members $2. Annual membership $1.

RED POLLED.

Animals recorded in the Red Polled Herd Book of Great Britain or in the American Red Polled Herd Book. Fees to members $1, to non-members $2. Annual membership $2.

SWINE.

YORKSHIRE.

Animals recorded in the Large White Section of the English National Pig Breeders' Association Herd Book or in the American Yorkshire Record. Fees to members 50c., to non-members $1. An additional fee of 50c. to members and $1 to non-members is charged for each ancestor recorded to complete pedigrees of animals recorded in the American Book. All ancestors back to and including those imported from Great Britain must be recorded. Annual membership $2.

BERKSHIRE.

Animals recorded in the British Berkshire Herd Book or in the American Berkshire Record. Fees same as Yorkshire, including charges for recording ancestors in American Book.

TAMWORTH.

Animals recorded in the Tamworth Section of the English National Pig Breeders' Association Herd Book or in the American Tamworth Swine Record. Fees same as Yorkshire, including charges for recording ancestors in American Book.

ESSEX.

Animals recorded in the American Essex Record. Fees same as Yorkshire, including charges for recording ancestors in American Book.

POLAND CHINA.

Animals recorded in the American Poland China Record or in the National Poland China Record. Fees to members 50c., to non-members $1. Annual membership $2.

CHESTER WHITE.

Animals recorded in Todds Improved Chester White Record, National Chester White Record, International Ohio Improved Chester White Record, Ohio Improved Chester White Swine Breeders' Association Record, Chester White Record Association of Indiana and the Standard Chester White Record Association. Fees same as Poland China.

DUROC JERSEY.

Animals recorded in the American Duroc Jersey Record. Fees same as Poland China.

SHEEP.

SHROPSHIRE.

Animals recorded in the English Flock Book of Shropshire Sheep or in the American Shropshire Sheep Record. Fees to members of the American Shropshire Registry Association, for animals imported from Great Britain 50c., for animals bred in the United States 50c.; to non-members—for animals imported from Great Britain $2, for animals bred in the United States $1. Life membership fee to American Shropshire Registry Association $5. Annual membership fee to Dominion Sheep Breeders' Association $1.

LINCOLN.

Animals recorded in the Lincoln Longwool Sheep Breeders' Flock Book or in the American National Lincoln Sheep Breeders' Record. Fees to members 50c., to non-members $1. Annual membership $1.

OXFORD DOWN.

Animals recorded in the English Oxford Down Flock Book or in the American Oxford Down Record. Fees same as Lincoln.

COTSWOLD.

Animals recorded in the English Cotswold Flock Book or in the American Cotswold Record. Fees same as Lincoln.

DORSET

Animals recorded in the English Dorset Horn Flock Book or in the American Continental Dorset Club Record. Fees same as Lincoln.

SOUTHDOWN.

Animals recorded in the English Southdown Flock Book or in the American Southdown Record. Fees same as Lincoln.

HAMPSHIRE DOWN.

Animals recorded in the English Hampshire Down Flock Book or in the American Hampshire Down Flock Record. Fees same as Lincoln.

LEICESTER.

Animals recorded in the English Leicester Flock Book, the English Border Leicester Flock Book or in the American Leicester Record. Fees same as Lincoln.

HIGHLAND BLACKFACE.

Animals imported from Great Britain from flocks recognized as pure bred. A certificate to this effect must be furnished certified by the Secretary of the Blackface Sheep Breeders' Association. Fees same as Lincoln.

CHEVIOT.

Animals recorded in the English Cheviot Sheep Flock Book or in the American Cheviot Flock Book. Fees same as Lincoln.

SUFFOLK.

Animals recorded in the English Suffolk Flock Book or in the American Suffolk Sheep Record. Fees same as Lincoln.

Blank application forms and other information, if desired, will be furnished on application to the Accountant National Live Stock Records, Ottawa, Canada.

Ottawa, Canada, February 1, 1909.

ACT OF INCORPORATION.

The following is a copy of the Dominion Act providing for the incorporation of Live Stock Record Associations.

An Act Respecting the Incorporation of Live Stock Record Associations.

1. This Act may be cited as the Live Stock Pedigree Act.

2. Any five or more persons who desire to associate themselves together for the purpose of keeping a record of pure-bred live stock of any distinct breed or several records each of a distinct breed of the same class of animals, may make application, in the form A in the schedule of this Act, to the Minister of Agriculture for incorporation.

(2) Such application shall be in duplicate, and shall include a copy of the proposed constitution, by-laws and rules of the association.

(3) The signatures to the application shall be verified by the affidavit of a subscribing witness thereto, before a notary public, commissioner for taking affidavits or justice of the peace. 63-64 V., c. 33, s. 1.

3. If the Minister approves of the application, he shall cause one of the duplicates thereof to be registered in the Department of Agriculture, and the other to be returned to the applicants with a certificate endorsed thereon and signed by him, in the Form B in the schedule to this Act. 63-64 V., c. 33, s. 2.

4. Thereupon, from the date of such certificate, the applicants and such other persons as become members of the association shall be a body corporate and politic by the name specified in the application, with the constitution, by-laws and rules included therein, and with power to hold such property as is required for the carrying on of the business of the association. 63-64 V., c. 33, s. 3.

5. Not more than one association for each distinct breed of horses, cattle, sheep or swine shall be incorporated under this Act. 63-64 V., c. 33, s. 4.

6. The constitution, by-laws and rules of the association shall provide for,—

(*a*) the registration of pedigrees of pure-bred live stock;

(*b*) the suspension and expulsion of members;

(*c*) the election of officers and their duties, and the filling of vacancies;

(*d*) the mode of convening annual, general and special meetings;

(*e*) the audit of accounts;

(*f*) the location of the head office and of the branch offices, if any.

(*g*) The Constitution, by-laws and rules may also provide for the exercise, in conjunction with any other association or associations incorporated under this Act, of any of its powers or functions through a common officer or officers to be appointed by such associations. 63-64 V., c. 33, s. 5; 4-5 E. VII., c. 21, s. 1.

7. The constitution may be altered and any by-law or rule may be altered or repealed at a meeting of the association called for that purpose, but no such alteration or repeal shall have force or effect until it has been approved by the Minister and registered in the Department of Agriculture. 63-64 V., c. 33, s. 6.

8. The association shall cause a book to be kept by the secretary at the head office, and by an assistant secretary at each branch office, wherein shall be written a copy of the constitution, by-laws and rules.

(2) Persons becoming members of the association may examine the said books. 63-64 V., c. 33, s. 7.

9. The association may consist of annual subscribers and life members, and the annual and life membership fees shall be fixed by the members at the annual meeting or at a meeting of the association called for that purpose.

(2) Any person who has not been expelled from the association may become a member thereof by giving or sending his name and address to the secretary, together with the annual or life membership fee; and such person shall thereupon be entitled to the rights and privileges, and subject to the liabilities of a member as fully as if he had signed the application for the incorporation of the association. 63-64 V., c. 33, s. 8.

10. The constitution, by-laws and rules of the association shall bind the association and the members thereof to the same extent as if each member had subscribed his name and affixed his seal thereto. 63-64 V., c. 33, s. 9.

11. The liability of each member shall be limited to the amount of his membership fees due. 63-64 V., c. 33, s. 10.

12. At the annual meeting the retiring officers shall present a full report of their proceedings and of the proceedings of the association, and a detailed statement, duly audited, of the receipts and expenditures for the previous year, and of the assets and liabilities.

(2) A copy of the said report, with a list of the members and their addresses and a list of the officers elected, shall be sent by the secretary to the Minister within twenty days after the annual meeting. 63-64 V., c. 33, s. 11.

13. If the association ceases for twelve consecutive months to do business as required by its constitution, by-laws and rules, or if the Minister is satisfied, after an inquiry at which the association was given due notice to appear, that the business of the association is not being properly conducted, the Minister may declare the corporate powers of the association forfeited. 63-64 V., c. 33, s. 12.

14. Any person who signs a false pedigree intended for registration, or who presents or causes another person to present a false pedigree for registration by the association, shall, upon summary conviction, upon information laid within two years from the commission of the offence, be liable to a penalty not less than one hundred dollars and not exceeding five hundred dollars for each false pedigree so signed or presented, together with the costs of prosecution. 63-64 V., c. 33, s. 13.

15. At the request of any association incorporated under this Act, authorized at the annual meeting or at a meeting called for that purpose, the Minister of Agriculture may, through an officer of his department, thereunto authorized by him, approve, under the hand of that officer and the seal of his department, or such other seal as is adopted for that purpose, the certificates of registration issued by such association. 4-5 E. VII., c. 21, s. 2.

APPLICATION FOR INCORPORATION.

We, the undersigned, hereby apply for incorporation as an association under the provisions of the Live Stock Pedigree Act.

The name of the association is to be (*name of association*), and the object for which it is to be formed is to keep a record of the pedigrees of pure-bred (*name of breed*), and to collect, publish and preserve reliable and valuable data concerning that breed.

The names and addresses of the officers of the association are (*names and addresses in full.*)

The constitution, by-laws and rules of the association are as follows: (*Insert constitution, &c., at length.*)

Dated at , the day of .

Signatures of Applicants.

I, the undersigned, solemnly swear that I know (*mentioning the names of the signers known to him*) and that they severally signed the foregoing application in my presence.

Sworn before me, at
this day of ,
19 . } (*Signature.*)

A. B.

THE MINISTER'S CERTIFICATE.

I certify that the within application is approved this day of , 19 , in pursuance of the Live Stock Pedigree Act.

C. D.,
Minister of Agriculture.

63-64 V., c. 33, sch. B.

APPENDIX No. 17.

OTTAWA, October 31, 1908.

SIR,—I have the honour to transmit herewith a copy of a paper read by me at the recent International Congress on Tuberculosis held at Washington, D.C.

In this paper I have confined myself to that phase of the question set forth in the title, viz., 'The Control of Bovine Tuberculosis,' refraining almost entirely from any mention of measures for the protection of the public against possible infection from bovine sources.

Of the two problems connected with bovine tuberculosis, namely, the eradication of the disease from the herds of a country and the protection of the human race from bovine infection, the latter is by far the most simple and easy of solution.

Under the system now followed in Canada, matters of this nature are properly dealt with by the public health authorities operating under provincial laws which, in cases where this has not been already done, can easily be so amended as to furnish the powers necessary for the absolute control of the situation as regards the supply of milk and meat, these products being, needless to say, the most important agents in the communication of tuberculosis from animals to man.

Danger from the first mentioned source can be practically eliminated by providing for the regular veterinary inspection and testing with tuberculin of all herds supplying milk for human consumption; animals reacting to the test or, even in default of reaction, showing clinical evidence of being affected with tuberculosis, to be permanently ear-marked and the use of their milk for human food absolutely prohibited.

This course has been followed in some communities in Manitoba for a considerable time by virtue of amendments made, many years ago, to the Municipal Act of that province.

Similar regulations are in force in several communities in other provinces and I may remind you that, with the view of encouraging and assisting the efforts of municipal authorities in this direction, this branch of your department supplies tuberculin, free of charge, for the use of duly qualified veterinarians, on condition that reports of all tests made are promptly furnished and that reacting animals are properly earmarked.

The meat supply can be similarly safe-guarded by the abolition of the secret and unsanitary private slaughter-houses and the substitution therefor of municipal abattoirs conducted under the supervision of specially trained and qualified veterinary inspectors as is now done, under the provisions of the Meat and Canned Foods Act, in all establishments engaged in the export or interprovincial meat trade.

A satisfactory, practical solution of the wider problem of the complete eradication of bovine tuberculosis has yet to be found.

While I regret that I am not, at present, in a position to recommend any definite policy with this end in view, I have, in the accompanying paper, made some tentative suggestions as to the lines which, with our, even yet, very imperfect knowledge of the subject, it would, in my opinion, be reasonably safe to follow.

Meanwhile, I am watching very closely the more or less experimental policies adopted, from time to time, by other countries, as also the earnest and painstaking work of the many veterinary scientists who, in various parts of the world, are striving to discover some reasonable method of effectively stamping out the disease.

The unfortunate and, in some cases, utterly discouraging results which have followed hasty and ill-digested legislation in other countries indicate that, in dealing with this much vexed question, it is advisable to make haste slowly and to be at least reasonably certain of success, before committing the Dominion to the large expenditures involved in an undertaking of such magnitude.

I have the honour to be, sir,
Your obedient servant,

J. G. RUTHERFORD,
Veterinary Director General and Live Stock Commissioner.

The Honourable,
The Minister of Agriculture.

THE CONTROL OF BOVINE TUBERCULOSIS.

A Paper read before Section VII. of the International Congress on Tuberculosis, at Washington, D.C., on October 1, 1908.

Mr. PRESIDENT,—It would be most unbecoming in me, following the various distinguished speakers who have taken part in the discussions of this Congress, and especially at this late date in the proceedings, to occupy any great length of time in laying before its members the few ideas on the control of Bovine Tuberculosis which I have been able to put together in the limited period at my disposal.

I observe that on the official programme the subject assigned to me is the 'Control of Bovine Tuberculosis in Canada,' the last two words having been added to the title originally sent in by me.

I have but little to say on the control of bovine tuberculosis in Canada, inasmuch as while in some districts, under municipal and provincial laws, efforts are being made to control the disease in dairy herds supplying various centres of population, very little is now being done by the federal government through the Health of Animals Branch of the Department of Agriculture, which is in my charge.

Although for some years, at a period prior to my assuming office, a very considerable amount of testing with tuberculin upon the application of owners was carried on, no appreciable benefit was found to result, and as a matter of fact, we now confine ourselves to the testing of cattle imported or exported for breeding purposes, those on the Experimental Farms, and a few other herds which have been placed by their owners under the direct control of our officers.

We, however, on the request of owners of cattle who desire them tested, supply tuberculin free of charge to any reputable qualified veterinary surgeon, on condition that he will send to the department the results of the tests made by him, on charts which we furnish for that purpose.

All cattle reacting to tuberculin in Canada, save those privately tested, are permanently earmarked by cutting a large T out of the right ear.

I may as well frankly state that the reason for this apparent inertia is that, so far, no satisfactory intelligent method of dealing with bovine tuberculosis has been evolved and we deem it wiser, before taking action, to await the results of the investigations now being conducted by veterinary scientists in various countries, in the hope that some better way of dealing with the problem may be discovered.

Our knowledge of tuberculosis, the tuberculin test, and of their vagaries, has all along been defective and incomplete and undoubtedly is so to-day, and when we bear in mind the many legislative mistakes which, owing to this lack of exact knowledge, have been made in the past, it must be admitted that caution is commendable, and that, before taking any definite departmental action involving the large interests

which are at stake in such a country as Canada, it is reasonable that we should 'look before we leap,' and guard, as far as may be, against the possibility of having to recede, more or less ignominiously, from a position once taken.

Many of our medical friends and some veterinarians whose zeal outruns their discretion, advocate compulsory testing and the slaughter of all reacting animals. At first sight, to men lacking practical experience and perhaps devoid of responsibility, this policy may appear a very simple solution of the problem. That it is very far from being so, however, needs but little demonstration to an audience of this nature. All practical veterinary sanitarians, dealing in large matters, are, even without taking into consideration the painful experience of those communities which in earlier days were rash enough to adopt it, well aware, not only of the great difficulties to be encountered in carrying out such a policy, but of the fact that under ordinary circumstances, in spite of the great economic waste involved, its results are by no means so satisfactory as its advocates would like to have us believe.

Most of us can remember the time when the majority of veterinarians, many of whom should have known better, believed that if a herd of cattle were tested, the reactors destroyed and the premises disinfected, the disease was stamped out and the owner might thereafter be left to follow his own courses.

Intelligent men have, of course, understood from the beginning that there must be, in the very nature of things, a period of latency or incubation between the time of infection and that when an infected animal would react to tuberculin. This period was fixed in 1899 and 1900 by contemporaneous but entirely independent experiments, carried on by the Tuberculin Committee of the Royal Agricultural Society of England and by Drs. Nocard and Rossignol, under the auspices of the Société de Médecine Vétérinaire Pratique of France. The results in both cases were practically the same and showed the period of incubation, while depending somewhat upon the mode and degree of infection, to range from eight to fifty days.

This fact, affecting vitally as it does both the original herd and any additions or replacements which may be made, is in itself a very serious obstacle to the satisfactory working out of a policy of compulsory testing and slaughter, even with liberal compensation. Taken in conjunction with the vagaries of tuberculin, especially on second, third and fourth tests in the same herds, and the numerous ingenious methods adopted by owners, especially of pure bred cattle, in order to defeat the test, it is sufficient to exclude from the field of practical action this method of dealing with tuberculosis, except in small and circumscribed communities, in which all, or at least a majority of the owners are alive to the necessity of stamping out tuberculosis and are willing to co-operate heartily with the authorities in bringing about that result.

This conclusion on my part has not been rashly arrived at. Ever since tuberculin was first used as a diagnostic agent in bovine tuberculosis I have been studying its action and during the whole of that period my opportunities for such study have been considerably greater than fall to the lot of the average veterinarian.

Let us go a little more into detail. A herd of, say one hundred cattle, kept under ordinary stable conditions is tested and twenty-five reactors are found. These twenty-five animals, together with any which, owing to the disease being in an advanced stage, may fail to react but which are detected by clinical examination, are slaughtered and the premises carefully disinfected. It is not so very long, as I have already said, since many veterinarians were teaching that such a herd was safe and sound and that provided any animals added were carefully tested before being brought into contact, no further danger need be apprehended. This is, of course, very far from being the case.

In the first place a retest after three months will, depending to some extent on the virulence of the particular infection, a point of great importance, and the sanitary conditions, reveal perhaps from five to ten new reactors. Even after these have been destroyed and the premises again disinfected the herd is by no means safe. The

ten reactors, taking that as the number, have been living in close contact with the remaining sixty-five and it is quite likely that three months later, several of the latter will be found to be affected. Here also comes into play the uncertainty of tuberculin in repeated tests, a most serious consideration, especially where doubtful reactions are concerned. In spite of Professor Vallé's important and valuable discovery, which I may say does not by any means apply in all cases, it is quite within the bounds of possibility that a number of animals, affected to a greater or less degree, will fail to react when tested for the third or fourth time. This acquired tolerance to tuberculin is one of its most serious limitations and constitutes another difficulty somewhat hard to overcome. Let us admit, however, that after the lapse of a longer or shorter period and a number of carefully conducted retests, the survivors of the original herd are properly pronounced healthy.

We must now take into consideration the question of additions and replacements, one which, from a business standpoint, is, in the majority of instances, of paramount importance to the owner. It is not enough to have the new animals tested before bringing them on to the premises. The same limitation, viz., that of the incubative period, applies to such tests as to those with which we have been dealing. New arrivals must be isolated, not only from the original herd but from each other, and submitted to a retest at the expiry of at least three months before being allowed to come in contact with any other cattle.

Two further points here demand our attention. We have hitherto, presumably, been speaking of tests honestly applied to the cattle of an honest owner and by a capable, intelligent and experienced veterinarian. We must now first consider some of the nefarious methods employed by dishonest and unprincipled owners to nullify the test and so defeat the end in view.

The old method of dosing beforehand with tuberculin, although still followed in many herds, has largely lost its value through the discovery of Professor Vallé above referred to, and is now, as a rule, only employed when the testing veterinarian is agreeably complacent, or a few years behind his age. It has, among the more astute breeders and dealers, been largely superseded by the practice of administering one or other of the modern antipyretics, combined for the sake of safety with other drugs, to such animals as are known to be tuberculous, or which show any rise of temperature when undergoing the test.

This plan is beautiful in its simplicity. Temperatures are quietly taken from half an hour to an hour before the veterinarian makes his rounds and the febrifuge, mixed with a little sugar and disguised in a handful or two of meal, is licked up by the animal without fuss or trouble. There is no drenching, no handling, no excitement, the temperature drops and although there may be and often is thermal irregularity, there is no distinct rise and above all no tuberculin arch.

This brings us to the second of my two further points, viz., the veterinarian making the test.

While, with all its limitations, I have great confidence in the diagnostic properties of tuberculin, I must confess to a feeling of suspicion with reference to all charts that are in any degree, which I may term colourless, unless I know that the man who signs them is an honest, conscientious, wide-awake and experienced veterinarian. Too many men take it for granted that everything is fair and above board, and depending entirely on their thermometer readings, allow themselves to be hoodwinked by dishonest and unscrupulous owners. I could go into many details and perhaps furnish some amusement by recounting a few of the artful dodges resorted to in order to keep the veterinarian away from his cattle between temperatures so as to permit of their being safely manipulated, but time will not permit.

One thing, however, should be emphasized, viz., the fact that in the overwhelming majority of cases we have, in addition to the temperature rise, a distinct clinical reaction, some of the most salient features of which may be and often are only

temporary, while others persist until at least twenty-four hours after injection. Among the temporary signs which may be noticed, as a rule, from six to twelve hours after injection, are in severe cases, rigours, often accompanied by staring coat, general excitation and frequently diarrhœa. In less well marked cases we have coldness over the loins, quarters, thighs and tail, sub-acute excitation and general malaise. Even when these symptoms have passed off the animal maintains a standing posture and is more or less stiffened; there is loss of appetite, rumination is suspended, and in milch cows the flow of milk is diminished.

Close attention to and observation of the animals undergoing the test are, in my opinion, indispensable. Even with them it is possible for mistakes to be made; without them the tubereulin test is very apt to be badly discredited.

The older veterinarians here will recollect that, prior to the discovery of tuberculin, much attention was paid, both by teachers and practitioners, to the clinical diagnosis of bovine tuberculosis. Of late years this phase of practice has been almost entirely lost sight of, the younger men practically depending on tuberculin as a diagnostic. This state of affairs is regrettable and should be remedied by cultivating, with regard to cases of tuberculosis, that habit of painstaking observation which alone makes for success in the diagnosis of most of the other maladies to which dumb animals are subject.

I might perhaps explain that the foregoing remarks on the necessity of care and exactitude in making tests are intended to emphasize the idea that only skilful and specially trained men can with safety be employed in this work, no small difficulty in itself, when it comes to undertaking a universal and compulsory testing policy.

There is still more to be said against compulsory testing and slaughter. Many reactors are but slightly affected, and while in the case of beef cattle in good condition the loss from their slaughter may be insignificant, it is a very different matter when valuable pure-bred herds or even common grade stock, thin in flesh, are condemned. It is true that with the latter the question of compensation may be more easily settled than with the former, but the matter of economic waste is only one of degree, for while the pure-bred reactors might live out their natural lives and produce much valuable and, with proper precautions, healthy stock, the thin grades might be fattened and slaughtered under careful supervision for purposes of human food.

For the reasons given above I am convinced that, at least on any large scale, the policy of compulsory testing and slaughter is not a practicable one.

Turning to the policy of voluntary testing, or testing in response to applications from owners, now followed in certain of the United States and in several of the countries of Europe, I would point out that not only do most of the arguments against compulsory testing apply to it with equal force, but several other factors come up for consideration. Among these perhaps the most important is the fact that in testing only those herds in a country which are voluntarily submitted to the authorities, the progress made in the direction of eradicating tuberculosis must, of necessity, be not only very slow but very uncertain. Even Professor Bang admits that, under the experience of repeated and often disappointing tests, the patience and courage of our Danish friends not unfrequently fail and they become weary of well-doing and relapse into carelessness.

This phase of the matter is one which must be taken into account and when with it is considered the fact that the last to ask for the test are, as a rule, the breeders of pure-bred stock, whose herds are the principal agents in disseminating disease, the ultimate ineffectiveness of voluntary testing is pretty clearly demonstrated. Owners must obtain fresh blood from time to time and unless a man is heart and soul with the authorities in their efforts to clean up his herd and takes every possible and minute precaution accordingly, it is, so long as tuberculosis

exists in the country, only a matter of time until his stock relapses into a condition of disease.

In this connection I have read with much interest the plan proposed by Dr. Niven, Medical Health Officer of Manchester, and supported by Professor Delaping and Mr. Brittlebank, the chief veterinary officer of that city, which includes the forming of disease-free islands by eradicating tuberculosis from certain farms and gradually extending the work over small districts, to be still further enlarged as the system finds favour with stock owners.

While there are some features of the scheme, such as the spending of public money in specially selected localities to the exclusion of other tax-payers and the supplying of sanitary buildings, through bringing pressure to bear on landlords or otherwise, which are scarcely applicable to conditions in America, it is, in my opinion, much more sensible and likely to be productive of ultimate benefit than the diffuse policy of promiscuously testing a herd here or there over an extensive territory, difficult, if not impossible, to keep under observation or control without an enormous staff of well trained, experienced and absolutely conscientious veterinary inspectors, having no interest, beyond that of duty, in the herds with which they are called upon to deal or their owners. I might here say that the policy of employing local practitioners for this work has been repeatedly tried and, in my experience at least, has not in the majority of instances proved either beneficial or successful.

I have nothing to say against the Bang system itself; in fact I am, and always have been, one of its most consistent advocates and admirers. I cannot, however, after thirty years experience as a veterinarian and with the knowledge, acquired in that time, of conditions on the ordinary North American farm, bring myself to believe that it is capable of successful general application on this continent.

There is no doubt that if all our stock owners were thoroughly intelligent, well informed, anxious to rid their herds of tuberculosis and gifted with an infinite capacity for taking pains, either the Bang system or that of Ostertag might be adopted with every hope of a successful issue. As matters stand, we must, in order to deal with bovine tuberculosis effectively, have some definite policy of legal control and the question, to my mind, is whether or not such control can properly be based on the tuberculin test.

At present I am inclined to favour a combination of the system of Bang and Ostertag with that of the Manchester men, accompanied by a closer supervision of infected herds than is recommended by either of the two first named authorities, so far as I understand their methods.

All clinical or, if they can be detected, open cases of tuberculosis, should be destroyed; all the adults in herds, in which such cases are found, to be treated as if diseased, marked and segregated accordingly; all milk from such herds to be pasteurized, whether used for human food or for that of animals; the progeny to be effectively separated from the adults, regularly submitted to the tuberculin test and kept by themselves until the disease has been eliminated from the premises by the death or removal of the affected parent stock. Any animals added to the healthy herd would, of course, have to be tested on purchase, and retested after three months careful isolation.

I am free to admit that this plan is open to many of the objections which I have advanced against the other two already mentioned, but it appears to me to obviate the enormous economic waste and the tremendous popular opposition involved in the policy of compulsory slaughter, while it promises, if systematically applied and patiently and carefully carried out, infinitely better results than can be hoped for from that of promiscuously testing the herds of only such owners as are willing to submit them to the action of the authorities.

The presence of one or more actual clinical cases of tuberculosis in any herd would constitute a perfectly defensible and reasonable ground for official action, and

by making notification by owners or veterinarians compulsory, as in other scheduled diseases, reliable information on which such action could be taken, would in most instances be forthcoming.

As has been well said by the editor of the *Lancet* in commenting on the recent able paper of Dr. Overland of Norway, the famous address of Dr. Koch in 1901 has, after all, by stimulating others to investigation and research, been productive of good, perhaps to an extent sufficient to offset the hesitation and delay in actual practical effort which it undoubtedly caused.

As a result of that address, we veterinarians to-day know, or perhaps I should say, have the proofs conclusive and satisfactory, of many things which we knew before, but were scarcely able to prove, regarding the transmissibility to man of bovine tuberculosis and vice versa.

And this brings me to vaccination, a subject on which I have nothing to say, beyond that, up to the present, the published results of inoculation with bovo-vaccine are, from a practical viewpoint, singularly confusing, inconclusive, and discouraging. The immunity acquired under the most favourable conditions appears to be of short duration, and any advantage which may be gained, is, to my thinking, more than offset by the danger of spreading the disease.

Where cultures of the human type are used the risks appear to be, if possible, even more serious. Weber and Tirze, working under the direction of the German Imperial Health Office, report, according to Theobald Smith, that the udder of a cow vaccinated with a human culture, shed human bacilli into the milk for a period of fifteen months.

Let us make haste slowly in work of this kind and be sure of our ground before we issue any more of those definite pronouncements which make nasty swallowing later on.

I have now briefly and inadequately placed before this Congress my views regarding the various methods recommended by scientists for the control of bovine tuberculosis. While these views may to some appear pessimistic, they are at least honest and have been carefully considered with due regard to the responsibility which the veterinary sanitarian, entrusted with large interests, owes to humanity at large as well as to those interests. Dogmatize as we may, we are still groping, and in this as in other matters of a like nature, those who have delved the deepest are the least sure of their ground.

In the meantime, while we are awaiting, as I fear we will for some time yet have to await, the discovery of a certain and satisfactory scientific method of dealing with bovine tuberculosis, let us, as practical men, carry on an energetic campaign of education among cattle owners and the general public. Bovine tuberculosis will be stamped out when individual owners realize that it pays much better to keep sound cattle than to lose money and feed in maintaining herds tainted with disease.

In this campaign of education there should first be taken up a question in regard to which veterinarians have hitherto, in most cases, been culpably negligent. If there is one matter to-day in which veterinarians are behind the age, it is that of failing to insist at all times, in season and out of season, on the importance to live stock of thorough and effective stable ventilation. Having before us the object lesson afforded by the medical profession, and the marvellous results which its members are achieving by open air treatment, not only helping, but actually curing advanced cases of tuberculosis, to say nothing of checking the disease, as is now daily done, in its early stages, it is nothing short of disgraceful that we are yearly permitting thousands of valuable animals to become infected owing to the unsanitary conditions under which their owners insist on keeping them.

Of the truth of this contention, which is, perhaps, at first sight, rather sweeping, there is no lack of proof. In northern countries where cattle are generally closely housed, and where a proper system of ventilation is the exception and not the rule,

we almost invariably find bovine tuberculosis rampant. In milder climates where animals have free access to fresh air, as for instance among the Hereford cattle in England, it is a rare thing to find a case of that disease. On the ranges tuberculosis is unknown, except where it has been introduced by some pampered stable-bred individual, and even such a one is more likely to recover than to die, provided the malady is not too far advanced and the first winter can be endured.

To put the case plainly, stockmen are breeding tuberculosis a great deal faster through neglect of this important subject of ventilation than it will ever be possible to stamp it out by the promiscuous use of tuberculin and the slaughter of diseased animals.

I may be pardoned if, while on this subject, I refer briefly to an experiment which I have been carrying on for the last three years. A herd of forty-three (43) cattle, (twenty-one (21) being dairy cows) twenty-eight of which had reacted to tuberculin, the remaining fifteen being apparently free from disease, has been kept under open air conditions since the fall of 1905.

The objects of this experiment, which is of a purely practical nature, are threefold; firstly, to ascertain the effect of open air treatment upon the diseased cattle themselves; secondly, to ascertain to what extent healthy cattle, kept in contact with diseased cattle under open air-conditions, are subject to infection; thirdly, to ascertain what percentage of healthy calves it is possible to rear from diseased cows, kept without any precautions under open air conditions.

The experiment is not yet concluded, nor have its results been properly tabulated for publication. I may say, however, that of the twenty-eight reactors, one only has broken down from generalized tuberculosis during the three years which have elapsed since the experiment began. One other has been killed owing to tuberculosis of the udder. Of the healthy animals kept in contact with them, feeding from the same racks, grazing over the same ground, drinking from the same pool, not a single one has become affected and this in spite of the fact that from time to time, animals suffering from acute generalized tuberculosis have been introduced to the herd and allowed to mix freely with its original members.

The results in the rearing of healthy calves, however, remind one somewhat of the Irishman's pigs, which, you will recollect, when killed, did not weigh as much as he expected and he never thought they would.

Of the calves dropped and reared by reacting cows, seventy-five per cent (75 per cent) have so far entirely failed to react, while twenty-five per cent (25 per cent) have reacted at various ages ranging from four months to one year. One calf died at six weeks old from generalized tuberculosis, this case being probably congenital.

The results of the various tests of the original reactors made at intervals of about six months and in the last case after a lapse of twelve months, are exceedingly interesting and will, when published, together with the *post mortem* notes, merit the careful perusal of those who believe in the absolute reliability of tuberculin as a diagnostic agent.

I might add that the cattle have had no shelter but open sheds and have, with the exception of a few of the weaker individuals, been fed nothing but hay for the three winters during which they have been under observation.

It should be mentioned that through an error in judgment on the part of an over-zealous herdsman, during the first winter, our calves began to arrive in December of 1906, the first being dropped when the thermometer was 29° below zero, the others following at intervals, sometimes very short, until the middle of March, 1907, and that in spite of this both dams and progeny throve well in the open air.

The results are very interesting in view of the present tendency to consider the digestive tract the most frequent and certain channel of infection. While the experiment above outlined assists in proving that young animals can be and are most

frequently infected through the digestive system, it also, to my mind, shows that, in the case of adults, infection through the air passages plays an important part.

I feel satisfied, and I think all practical men will agree, that had the healthy cattle in this experiment been kept under ordinary stable conditions with their diseased companions, they would not have escaped as they have done.

The highest medical authorities are nowadays advising, and with the very best possible results, our modern hothouse humanity, to get 'closer to nature' in every possible way. The advantages of adopting a similar policy in the handling and housing of domestic animals are too apparent to admit of discussion. Nature has furnished our animal friends with every conceivable requisite for protection against ordinary climatic conditions and most of the diseases and disabilities to which they are subject have been caused by and owe their continuance to the irrational artificial conditions imposed upon them by well-meaning but ignorant, or rather unthinking owners and attendants.

I am here, however, to learn and not to teach. The problem of the Control of Bovine Tuberculosis is undoubtedly the most serious confronting the veterinary sanitarian of to-day, and if the labours of this section of the International Congress result in its solution, I for one will be forever grateful.

APPENDIX No. 18.

OPEN AIR EXPERIMENTS WITH TUBERCULOUS CATTLE.

OTTAWA, March 31, 1909.

To the Honourable,
The Minister of Agriculture,
Ottawa, Ont.

SIR,—In the year 1905 a herd of cattle on one of the outlying experimental farms situated in Nova Scotia were found, on being tested, to be badly affected with tuberculosis.

All clinical cases having been slaughtered, the survivors were at my request kept under open air conditions from December, 1905, until May, 1906, when they were removed to Ottawa and placed in a secluded pasture to which outside cattle had no access.

Here also they were kept under open air conditions, their only shelter being a frame shed one board thick, wind and weather proof above and on three sides, but on the fourth open to a large yard where they were fed in winter, but from which they were at liberty to wander at will. Except when undergoing test, they watered themselves at running streams on one of which a drinking place was always kept open in winter. The pasture, which consisted of some two hundred acres of rough land, abounded in natural shelter, the shed itself being situated in a grove of evergreen trees which afforded considerable protection from the keen winds of winter.

Their food consisted of grass in summer and in winter of good sound hay. A small grain ration was occasionally given for a short period to such of the older animals as appeared to require it, but these cases were very few, the majority keeping in good condition at all times, although naturally running down in flesh in the late summer and early fall, the seasons being through the whole experiment abnormally dry. Salt was kept constantly within reach.

On arrival at the station the herd numbered forty-three (43) head, twenty-eight (28) being pronounced reactors. Of these latter twenty-one (21) were females of dairy blood, comprising pure bred and grade Ayrshires, Holsteins and Guernseys ranging in age from one to eleven years. One was a pure bred Ayrshire bull two years old, and the other six (6) were yearling steers, one being a Hereford grade and the others grade Shorthorns.

Of the non-reacting animals two (2) were yearling heifers of Ayrshire blood, seven (7) were yearling Shorthorn grade steers, and five (5) were calves of various dairy breeds.

The objects which I had in view in commencing the experiment, which was of a purely practical character, were three in number:

(1) To ascertain the effects of the open air treatment on the diseased cattle themselves.

(2) To ascertain to what extent healthy cattle kept in contact with diseased cattle were subject to infection.

(3) To ascertain what percentage of healthy calves it is possible to rear without any precautions from diseased cows kept under open air conditions.

In the light of experience I am now convinced that in so far as the securing of definite information on these three points was concerned, this original herd should have been maintained intact and without additions throughout the whole course of the experiment.

As will be shown, however, this was not done and the results of the work are accordingly less exact and proportionately less valuable from the breeder's point of view, although possibly more interesting to the professional man than they otherwise would have been.

The alterations which took place in the herd were as follows: One two-year-old heifer (non-reactor) and one bull calf died of black quarter shortly after arrival at the station. An eight-year-old cow (reactor) died of broncho-pneumonia after being mired in the creek for some time in freezing weather.

These losses as also some which occurred later among animals born on the station were, although regrettable, only such as might occur under any circumstances. I may say that after the occurrence of the black quarter cases, all the young stock was kept carefully vaccinated, and further, that no more cows got fast in the creek.

For the other changes, some of which I now think were mistakes, I must assume full responsibility.

In July, 1906, some few weeks after their arrival at the station the six reacting steers already mentioned were slaughtered under supervision. They were fat, and as we had numerous reactors capable of breeding and therefore more valuable, I grudged the grass they were eating, and decided to let them go.

Of the six reacting steers the carcase of one only was condemned, tubercular lesions being found in the post-pharyngeal glands and in the bronchial and mediastinal glands, as also a large abscess containing several pints of semi-fluid fœtid pus involving the liver and the right kidney.

Although tuberculosis was found in each of the four others, it was of the slightest character. The sixth was apparently free from disease.

We may let them go from this paper as they went from the experiment, as their history is of little value, except in so far as it corroborates very strikingly the theory that the incipient case of tuberculosis gives the highest reaction to tuberculin. They were only long yearlings on arrival at the station, yet their highest temperatures, when tested the previous year in Nova Scotia were respectively, 107·6°, 106°, 106°, 108·2°, 106°, 105°.

In the fall of 1907 the seven steers which were rated as healthy on arrival, having been subsequently tested several times without reaction, were slaughtered, no evidence of tubercular infection being discovered in any of these.

These steers should undoubtedly have been kept in contact with the diseased cattle until the close of the experiment, but as we had a number of other non-reactors, and these were of no value for breeding purposes, while the herd from natural increase and other additions numbered at this time over seventy-five (75) head, I was reluctantly compelled to let them go.

The outside animals added to the herd were of two kinds:

Owing to a lack of foresight on the part of those in charge of the cattle in Nova Scotia, during the latter part of the first winter the bull was permitted to run with the cows, most of which had not been bred during the previous season. As a natural result our calves began to arrive in November, most of them coming in December when the weather was intensely cold. Fearing that under open air conditions the loss would be considerable, I arranged for a supply of young calves from outside sources, and on such of the cows as were heavy milkers I put an extra calf. This also was an error from the point of view of exactitude in results, but although, as will be seen later, a greater percentage of these animals than of those born on the station, proved to be tubercular, I am not inclined to the belief that any of them were affected on arrival, as none of them were more than a few days old.

The other additions, however, comprised both diseased and healthy animals. Thirteen (13) mature reactors and one reacting yearling, mostly pure bred animals of the dairy breeds, were introduced from time to time, while four non-reacting yearlings were also added.

Seven of these outside reactors were on arrival well marked clinical cases, and as several subsequently broke down with what was evidently a most virulent form of the disease I am inclined to think that they were responsible for the infection of the young stock and possibly for the re-infection of a number of the older animals which had ceased to react and were apparently on the road to recovery.

Their introduction was therefore another mistake, but as from several of them we were able to derive valuable information we need spend no time in vain regrets.

In all 350 tests were made during the course of the experiments, 259 of which were on reactors and the remainder on animals which with one exception, No. 4-A, to which special reference will be made later, were so far as it was possible to judge, free from tuberculosis.

Of the 350 tests above mentioned, 161 were made in such a way as to ensure the detection of any abnormally early reaction, and it is interesting to note that although in 119 of these cases the animals tested were reactors and in twenty-one (21) the period between the tests was less than three months, there were only seven (7) instances in which it might have been possible to miss the highest reading by beginning to take post injection temperatures at the tenth hour as was the usual practice until the announcement made by Professor Vallée, a few years ago, led us to look for earlier reactions, especially in animals which had been previously tested within a short period.

As it is rather interesting, I will give the details of these cases as follows:

No.	Name.	No. of test.	Period since last test.	Date of test.	Distinct rise.	Highest temp.	Normal temp.
4	Sarah	7th	11 mos	Sept. 1908	2d hr	8th hr.	10th hr.
6	Mamie	4th.	8 mos	May 1907.	4th hr.	4th hr.	7th hr.
13	Polly	8th	3 mos	Feb. 1909.	6th hr.	8th hr.	20th hr.
15b	Lydia's calf (adopted)	2d.	11 mos.	Sept. 1908.	2d hr.	2d. hr.	8th hr.
18a	Bonnie Lass's heifer calf.	2d.	3½ mos.	Nov. 1907.	4th hr.	8th hr.	10th hr.
30	Guernsey heifer	5th	11 mos.	Sept. 1908.	4th hr.	8th hr.	16th hr.
68	Denty Girl	4th.	11 mos.	Sept. 1908.	2d. hr.	8th hr.	10th hr.
86a	Illuminata 3d's calf	3d	3 mos.	Feb. 1909.	2d. hr	24th hr.	26th hr.

It is noteworthy that none of these early reactions occurred in the twenty-one (21) cases in which the last previous test had been made less than three months before, and that, in fact, most of them occurred in animals which had not been tested for nearly a year.

The eighth test in this table (86a, Illuminata 3d's calf) is only listed with the others as showing one of the eccentricities of temperature which may be encountered when using tuberculin.

Having now laid before you a general outline of the experiment, I propose to run as rapidly as possible over its details, first dealing with each animal separately and concluding with a brief summary of the results obtained.

The information to be derived from these is perhaps of minor value, being decidedly negative in character, but as we have reason to know, it is not well to be at any time too positive in regard to bovine tuberculosis.

In order to economize your time and patience, I propose on this occasion to give only the results of each test and not the various temperatures. The tests were of various kinds. Those of May and October, 1905, September, 1906, July and October, 1907, and February 18, 1909, were conducted in the ordinary way by injecting at night and commencing to take temperatures at or about the tenth hour thereafter.

On the other hand, in that of May, 1907, the taking of temperature was begun at the fourth hour after injection and continued every third hour until the seven-

teenth hour, while in those of September and November, 1908, the first temperature was taken two hours after injection, subsequent temperatures being taken every second hour until the twenty-fourth hour.

That of February 21 to 27, 1909, was a special test in which only a few of the survivors were dealt with. In this test a large number of preliminary temperatures were taken, the animals injected at 3.30 p.m. on the 25th and temperatures taken at the third hour and continued for over twenty-four hours.

In the cases of some of the added cattle, dates other than those just mentioned will be noticed. These tests which were not made at the station were all of the usual nature.

Koch's tuberculin was used, and while the doses were graded to suit the different ages of the animals, they were never any larger than would have been administered in an ordinary official test. It was unfortunate that the animals had to be tied up when being tested, as this was an interference with their usual habit of life, but every precaution was taken to prevent their becoming annoyed or excited, and I do not think that in any one case the results of the test were affected from this cause.

At the conclusion of the experiment all the animals then alive, except those which had been clearly shown to be healthy by repeated tests and isolated accordingly, were killed. Most of them were buried on the premises, but those whose condition warranted such a course, were slaughtered under careful inspection for use as food.

Original Herd.

The age given is that of the animal at the time of slaughter or at the close of the experiment.

No. 1. *Maggie.*—Grade Ayrshire cow, 7 years.
Never showed clinical evidence of tuberculosis.
Ceased reactor.
Reacted May, 1905; October, 1905; September, 1906; May, 1907.
Tested without reaction October, 1907; September, 1908.
Slaughtered October 20, 1908.
Autopsy.—Small tubercular nodule left lung; caseated purulent lesions, posterior mediastinal glands.

Progeny.—(1a) Bull calf born February, 1907, always healthy and thrifty.
Tested without reaction October, 1907, September, 1908.
Slaughtered December 21, 1908.
Autopsy.—No evidence of tuberculosis.

No. 2. *Winnie.*—Grade Guernsey cow, 7 years.
Never showed clinical evidence of tuberculosis.
Reacted May, 1905; October, 1905.
Tested without reaction, September, 1906; May, 1907; October, 1907.
Reacted September, 1908; November, 1908.
Slaughtered November 19, 1908.
Autopsy.—Tubercular lesions both lung, some encysted, others recent; purulent tubercular nodules size pigeon's egg in peritoneum; small encysted and calcified lesions in posterior mediastinal and mesenteric glands.

Progeny—
Bull calf, born January, 1907 (cryptorchid).
Not tested.
Slaughtered June, 1907.
Autopsy.—No evidence of tuberculosis.
(2a) Bull calf born April, 1908; always healthy and thrifty.
Tested without reaction September, 1908; February, 1909.
Slaughtered April 26, 1909.
Autopsy.—No evidence of tuberculosis.

No. 3. *Yellow Kate.*—Imported pure bred Ayrshire cow, 9 years.
Animal lost flesh rapidly winter of 1906-7, when she nursed two calves; afterwards improved, but never again became fat, although showing no clinical evidence of tuberculosis.
Reacted May, 1905; October, 1905; September, 1906.
Tested without reaction May, 1907; October, 1907.
Reacted September, 1908.
Slaughtered October 18, 1908.
Autopsy.—Tubercular lesions left lung; some purulent, others encysted; calcified lesions anterior and posterior mediastinal glands; many small calcareous encysted nodules in mesenteric glands.

Progeny—
(3a) Heifer calf born December, 1906, healthy and thrifty.
Tested without reaction July, 1907; September, 1908; February, 1909.
Has since remained healthy.
(3b) Bull calf adopted December, 1906.
Healthy and thrifty.
Tested without reaction October, 1907.
Reacted September, 1908; November, 1908; February, 1909.
Slaughtered March 6, 1909.
Autopsy.—Left post pharyngeal gland tubercular, caseous. No other lesions.
(3c) Bull calf adopted December, 1906.
Died October, 1907, of diarrhœa.
Autopsy.—Very small tubercular lesions in one post pharyngeal gland.
(3d) Bull calf born May, 1908, healthy and thrifty.
Reacted September, 1908.
Slaughtered October 21, 1908.
Autopsy.—Tubercular lesions posterior mediastinal glands.

No. 4. *Sarah.*—Pure bred Ayrshire cow 8 years.
Never showed clinical evidence of tuberculosis.
Reacted May, 1905.
Tested without reaction October, 1905; September, 1906; May, 1907.
Doubtful reaction July, 1907; October, 1907.
Reacted September, 1908.
Tested without reaction November, 1908.
Slaughtered November 19, 1908.
Autopsy.—No evidence of tuberculosis.

Progeny—
(4a) Heifer calf born December, 1906, healthy and thrifty, no evidence of tuberculosis.
Tested without reaction July, 1907; May, 1908; November, 1908; February, 1909.
(See note.)
Slaughtered February 19, 1909.
Autopsy.—Right lung contained six purulent cavities, each as large as an egg; tubercular process involving visceral, diaphragmatic and costal pleural surfaces, right side of thorax; anterior and posterior mediastinal glands also tubercular.

No. 5. *Norah.*—Pure bred Ayrshire cow, 6 years.
Never showed clinical symptoms of tuberculosis.
Ceased reactor.
Reacted May, 1905; October, 1905.
Tested without reaction September, 1906; May, 1907; October, 1907; September, 1908; November, 1908.

Slaughtered November 19, 1908.
Autopsy.—No lesions of tuberculosis detected.
Progeny—
(5a) Bull calf at foot on arrival at station, always healthy and thrifty.
Tested without reaction September, 1906.
Has since remained healthy.
(5b) Bull calf born January, 1907, healthy and thrifty.
Tested without reaction July, 1907; May, 1908; November, 1908.
Slaughtered December 21, 1908.
Autopsy.—No evidence of tuberculosis detected.
(5c) Bull calf born April, 1908, healthy and thrifty.
Tested without reaction September, 1908; February, 1909.
Has since remained healthy.

No. 6. *Mamie.*—Pure bred Ayrshire cow, 5 years.
Never showed clinical evidence of tuberculosis.
Reacted May, 1905; October, 1905; September, 1906; May, 1907.
Tested without reaction October, 1907.
Reacted September, 1908.
Slaughtered October 18, 1908.
Autopsy.—Small encysted tubercular nodules anterior and posterior mediastinal glands. Caseous and encysted nodules in cervical lymphatic glands.
Progeny—
(6a) Heifer calf (twin) born December, 1906, always healthy and thrifty.
Tested without reaction July, 1907; November, 1907; May, 1908; November, 1908; February, 1909.
Slaughtered April 26, 1909.
Autopsy.—No evidence of tuberculosis.
(6b) Bull calf (twin) born December, 1906, healthy and thrifty.
Tested without reaction July, 1907; November, 1907; May, 1908.
Slaughtered December 21, 1908.
Autopsy.—No evidence of tuberculosis.
(6c) Heifer calf born April, 1908, healthy and thrifty.
Reacted September, 1908.
Slaughtered October 21, 1908.
Autopsy.—No evidence of tuberculosis.

No. 7. *Beatrice.*—Pure bred Ayshire cow, 8 years.
Showed no clinical evidence of tuberculosis
Reacted October, 1905; September, 1906.
Died January, 1907, from broncho-pneumonia, contracted through being mired in creek.
Autopsy.—Small encysted tubercular lesions in peri-bronchial, anterior and posterior mediastinal glands.
Progeny—
(7a) Heifer calf born December, 1906, healthy and thrifty.
Tested without reaction July, 1907; November, 1907; May, 1908; November, 1908.
Has since remained healthy.

No. 8. *Minnie.*—Pure bred Ayrshire cow, 5 years.
Never showed clinical evidence of tuberculosis
Ceased reactor.
Reacted May, 1905; October, 1905.

Tested without reaction September, 1906; May, 1907; October, 1907; September, 1908.
Slaughtered October 20, 1908.
Autopsy.—Slight encysted lesion in left lung. Encysted lesions in mesenteric gland.

Progeny—

(8a) Heifer calf born November, 1906, healthy and thrifty.
Tested without reaction July, 1907.
Doubtful reaction November, 1907.
Reacted September, 1908.
Doubtful reaction November, 1908; February, 1909.
Slaughtered March 6, 1909.
Autopsy.—Traces of previous peritonitis; no positive evidence of tuberculosis found in spite of careful examination.

(8b) Bull calf adopted November, 1906, healthy and thrifty.
Tested without reaction October, 1907; September, 1908.
Has since remained healthy.

(8c) Bull calf, born June, 1908.
Died from navel infection June 30, 1908.
Autopsy.—No evidence of tuberculosis.

No. 9. *Sonsy.*—Pure bred Ayrshire cow, 12½ years.
Tuberculosis of the udder detected on arrival at station. The following year showed clinical symptoms.

Clinical—

Reacted May, 1905; October, 1905; September, 1906.
Tested without reaction May, 1907.
Doubtful reaction July, 1907.
Slaughtered September 27, 1907.
Autopsy.—Generalized tuberculosis, pharyngeal glands caseated, left hind quarter udder caseated, also entire mesenteric chain, bronchial and mediastinal glands and pericardium affected. Tubercular deposit on pleural surfaces, both lungs adherent to costal pleura; portal glands affected, tubercular deposit on peritoneum, liver and one kidney.

Progeny—

(9a) Heifer calf born 1905; arrived at station at foot, healthy and thrifty.
Tested without reaction September, 1906; December, 1906; May, 1908.
Has since remained healthy.

(9b) Bull calf born February, 1907. Did not thrive, and although apparently healthy at birth and for some time afterwards, failed to develop and was noticed to cough occasionally—remained thin.
Tested without reaction July, 1907.
Reacted October, 1907.
Slaughtered October 10, 1907.
Autopsy.—Few nodules on lung surfaces, mediastinal and bronchial glands slightly affected.

No. 10. *Guernsey Heifer.*—4½ years.
While showing no definite symptoms, remained thin and unthrifty. Gave birth to two calves, one premature and one stillborn.
Reacted October, 1905; September, 1906; May, 1907; October, 1907; September, 1908.
Slaughtered October 18, 1908.
Autopsy.—Open tubercular lesions, caseated and purulent in lungs; similar lesions in liver; intestinal ulceration, grape formation on costal pleura,

nodules on diaphragm and spleen; lymph glands encysted; purulent lesions in post pharyngeal; purulent and encysted lesions in peribronchial, purulent broken down lesions in anterior and posterior mediastinal; encysted lesions in the periportal glands. Caseous lesions generally distributed throughout the mesenteric glands and encysted lesions in the trunk lymphatic glands.

Progeny—

(10a) Bull calf adopted January, 1907, healthy and thrifty.
Tested without reaction October, 1907; September, 1908.
Slaughtered December 21, 1908.
Autopsy.—No evidence of tuberculosis.

No. 11. *Grade Ayrshire Heifer 'A'*—4 years.

Exhibited clinical symptoms almost immediately after arrival at station, which continued to develop, although occasional temporary improvement was noticeable. Finally became greatly emaciated. Before slaughter she exhibited distressed breathing, was hide bound and suffered from diarrhœa. Gave birth to premature calf soon after arrival and reared one adopted one. She was also the dam of another (No. 22), which arrived at station when 6 months old. As will be noted, the adopted calf was tested three times, reacting to the two last tests.

Clinical—

Reacted October, 1905; September, 1906.
Tested without reaction May, 1907.
Slaughtered June 10, 1907.
Autopsy.—Generalized tuberculosis. Extensive lesions in lungs, breaking down, pus escaping from bronchial tubes. Tubercular deposits in retro-pharyngeal, anterior, posterior bronchial and mesenteric also sub-lumbar lymphatic glands.

Progeny (See No. 22)—

(11a) Bull calf adopted September, 1906. No clinical symptoms, but unthrifty.
Tested without reaction May, 1907.
Reacted October, 1907; September, 1908.
Slaughtered October 20, 1908.
Autopsy.—Caseated and calcified tubercular lesions right lung; encysted and calcified lesions in peribronchial and in anterior mediastinal glands

No. 12. *Ayrshire Heifer 'B'*—

Never showed clinical evidence of tuberculosis.
Reacted October, 1905; September, 1906.
Tested without reaction, May, 1907.
Doubtful reaction October, 1907.
Reacted September, 1908; November, 1908; February, 1909.
Slaughtered March 6, 1909.
Autopsy.—Tubercular lesions at base of each lung; tissue involved in both being size of man's fist, and having direct connection with bronchi. Small lesions in anterior and posterior mediastinal glands.

Progeny—

(12a) Bull calf arrived at station at foot, healthy and thrifty.
Tested without reaction September, 1906; December, 1906; May, 1907
Has since remained healthy.

(12b) Bull calf arrived at station at foot, healthy and thrifty.
Tested without reaction September, 1908.
Reacted February, 1909.

Slaughtered February 19, 1909.
Autopsy.—Small calcified tubercular lesions in right posterior pharyngeal lymphatic gland; posterior mediastinal glands hemorrhagic; no other lesions.

No. 13. *Polly.*—Grade cow, 5 years.
Never showed evidence of tuberculosis.
Reacted May, 1905; October, 1905; September, 1906.
Tested without reaction May, 1907; October, 1907.
Reacted September, 1908; November, 1908; February, 1909
Slaughtered March 6, 1909.
Autopsy.—Tubercular lesions on pleura, taking form chronic tubercular pleurisy. Some sub-pleura tubercular nodules. No other lesions.

Progeny—

(13a) Bull calf born December, 1906, healthy and thrifty.
Tested without reaction October, 1907; September, 1908
Slaughtered December 21, 1908.
Autopsy.—No evidence of tuberculosis.

(13b) Bull calf adopted December, 1906, healthy and thrifty.
Tested without reaction October, 1907; September, 1908.
Slaughtered December 21, 1908.
Autopsy.—No evidence of tuberculosis.

(13c) Heifer calf born May, 1908, appeared healthy and thrifty.
Reacted September, 1908; February, 1909.
Slaughtered February 19, 1909.
Autopsy.—Very small calcified tubercular lesions in posterior mediastinal glands. No other evidence of tuberculosis.

No. 14. *Jessie.*—Grade Ayrshire, 5 years.
No clinical evidence of tuberculosis.
Ceased reactor.
Reacted May, 1905; October, 1905.
Tested without reaction September, 1906; May, 1907; October, 1907; September, 1908; November, 1908.
Slaughtered November 19, 1908.
Autopsy.—Small purulent nodules (tubercular) partially encysted inferior lobe left lung, also small nodule in posterior mediastinal glands.

Progeny—

(14a) Heifer calf born January, 1907; healthy and thrifty.
Tested without reaction October, 1907; September, 1908; February, 1909
Has since remained healthy.

(14b) Heifer calf born May, 1908, healthy and thrifty.
Tested without reaction September, 1908; February, 1909.
Has since remained healthy.

No. 15. *Lydia Rooker.*—Pure bred Holstein cow, 7 years.
Showed no symptoms of disease although for some time suspected of udder tuberculosis. Owing to this suspicion her milk was repeatedly subjected to microscopical examination, without result, so far as the detection of tubercule bacilli was concerned.
Reacted May, 1905; October, 1905.
Tested without reaction September, 1906; May, 1907; October, 1907; September, 1908; November, 1908.
Reacted February, 1909.
Slaughtered March 6, 1909.
Autopsy.—No evidence of tubercular infection

Progeny—

(15a) Heifer calf born January, 1907, healthy and thrifty.
Tested without reaction October, 1907.
Doubtful reaction September, 1908.
Reacted February, 1909.
Slaughtered February 19, 1909.
Autopsy.—No evidence of tuberculosis.

(15b) Steer calf adopted January, 1907. Did not thrive very well, but remained apparently healthy.
Doubtful reaction October, 1907; September, 1908.
Tested without reaction November, 1908; February, 1909.
Slaughtered March 6, 1909.
Autopsy.—Calcified tubercular lesions in posterior mediastinal glands.

No. 16. *Rex's Maud.*—Pure bred Guernsey cow, 13 years.
Showed no symptoms of disease save an occasional cough. At times run down in condition, but not more than might reasonably be expected in an aged animal kept previously under artificial conditions.

Clinical—
Reacted May, 1905; October, 1905.
Tested without reaction September, 1906; May, 1907; October, 1907.
Doubtful reaction September, 1908.
Slaughtered October 18, 1908.
Autopsy.—Tubercular lesions at base of both lungs; in the right caseous and purulent; in the left purulent, opening direct into a bronchial tube through which pus was escaping. This pus proved infective to a guinea pig, proving the animal to have been a source of danger to others. Adhesions present on the costal pleurae; caseated and encysted nodules in anterior and posterior mediastinal glands. Caseous and encysted nodules in periportal glands; numerous calcareous encysted nodules in the mesenteric glands and caseated nodules in the thoracic trunk glands.

Progeny—

(16a) Heifer calf born February, 1907, healthy and thrifty.
Tested without reaction October, 1907.
Reacted September, 1908.
Slaughtered October 20, 1908.
Autopsy.—Small tubercular lesions along posterior border left lung; few tubercular nodules in the anterior mediastinal gland.

(16b) Bull calf born May, 1908, healthy and thrifty.
Tested without reaction September, 1908; February, 1909
Has since remained healthy.

No. 17. *Curly.*—Grade Guernsey cow, 7 years.
Always in excellent condition; never showed any evidence of tuberculosis.
Reacted October, 1905; September, 1906.
Doubtful reaction May, 1907.
Slaughtered June 20, 1907.
Autopsy.—Generalized tuberculosis, both lungs full of tubercular lesions; extensive adhesions both sides of thoracic cavity; tubercular lesions in the retropharyngeal, prepectoral, anterior and posterior mediastinal, bronchial mesenteric and inguinal glands; stenosis of the os-uteri

Progeny.—None.

No. 18.—*Bonny Lass.*—Pure bred Ayrshire cow, 4 years.
Showed no symptoms of disease; always in good condition
Reacted October, 1905; September, 1906.
Tested without reaction May, 1907; October, 1907
Reacted September, 1908.
Tested without reaction November, 1908
Slaughtered November 19, 1908.
Autopsy.—Extensive caseous and purulent lesions in both lungs with direct communication to the bronchial tubes; caseous and encysted lesions in the peribronchial anterior and posterior mediastinal, and encysted and calcified lesions in mesenteric glands.

Progeny—
(18a) Heifer calf born November, 1906, healthy and thrifty.
Tested without reaction July, 1907.
Reacted November, 1907; September, 1908.
Slaughtered November 13, 1908.
Autopsy.—Limited number of solitary tubercules about size of millet seed in apex of right lung. Tuberculous nature of these confirmed by microscopic examination; inflammatory changes in posterior mediastinal glands, but no definite tubercle formation. These changes were shown to be tubercular by microscopic examination.
(18b) Heifer calf born April, 1908, healthy and thrifty.
Tested without reaction September, 1908; February, 1909.
Has since remained healthy.

No. 19. *Holstein Heifer 'B.'*—4 years.
Kept in good condition; showed no evidences of tuberculosis.
Ceased reactor.
Reacted May, 1905; October, 1905; September, 1906.
Tested without reaction May, 1907; October, 1907; September, 1908.
Slaughtered October 22, 1908.
Autopsy.—Areas of tubercular infection on omentum; calcified lesions in peribronchial anterior and posterior mediastinal glands; small tubercular area, anterior portion left lung. Open.

Progeny—
(19a) Bull calf born November, 1906, healthy and thrifty.
Tested without reaction October, 1907; September, 1908.
Slaughtered December 21, 1908.
Autopsy.—No evidence of tubercular infection.

No. 20. *Holstein Cow 'A.'*—4½ years.
Always in good condition; never showed clinical evidence of tuberculosis.
Reacted May, 1905; October, 1905.
Tested without reaction September, 1906.
Reacted May, 1907; September, 1908.
Slaughtered October 21, 1908.
Autopsy.—Tubercular lesions in peribronchial and posterior mediastinal glands; caseous, some undergoing calcification.

Progeny—
(20a) Heifer calf, born December, 1906, healthy and thrifty.
Tested without reaction October, 1907; September, 1908; February, 1909.
Has since remained healthy.

No. 22. *Ayrshire Grade Heifer*, calf of No. 11.—3½ years.
Never showed clinical evidence of tuberculosis.
Tested without reaction September, 1906; May, 1907; October, 1907; September, 1908.
Reacted February, 1909.
Slaughtered February 19, 1909.
Autopsy.—Tubercular lesions evidently of recent origin found on posterior mediastinal and peribronchial glands.
Gave birth to two calves, both of which died at birth or immediately after. In these a careful post-mortem examination failed to reveal evidence of tuberculosis.

No. 28. *Togo*.—Pure bred Ayrshire bull, 4½ years.
Developed well, remained thrifty, no clinical evidences of tuberculosis.
Reacted October, 1905; September, 1906; May, 1907; October, 1907; September, 1908.
Slaughtered October 21, 1908.
Autopsy.—Calcified tubercular lesions in anterior and posterior mediastinal glands. No other lesions detected.

No. 29. *Holstein Cow*.—4 years.
Never showed clinical evidences of tuberculosis.
Reacted May, 1905.
Tested without reaction October, 1905 (high preliminary temp.); September, 1906; May, 1907; October, 1907.
Reacted September, 1908.
Slaughtered October 22, 1908.
Autopsy.—Small ulcerated area and small nodule on omentum. Also small nodule on liver. Microscopical examination of these lesions failed to reveal presence of tuberculosis.

Progeny—
(29a) Heifer calf born April, 1907, healthy and thrifty.
Tested without reaction October, 1907.
Doubtful reaction September, 1908.
Slaughtered November 13, 1908.
Autopsy.—No evidence of tuberculosis detected.

No. 30. *Guernsey Grade Cow*.—4 years.
Condition of this animal varied considerably; showed no clinical symptoms of tuberculosis, but was never fat.
Reacted October, 1905.
Tested without reaction September, 1906.
Reacted May, 1907; October, 1907; September, 1908.
Slaughtered October 18, 1908.
Autopsy.—Tubercular lesions present in liver appearing as small excrescences of an active type on its external surface while the body of the organ contained a tubercular mass 5 inches in diameter. Excrescences on peritoneum, nodules in lymph glands; encysted lesions in posterior mediastinal and periportal glands; encysted and purulent lesions in some of the mesenteric and encysted lesions in the abdominal trunk glands.

Progeny—
(30a) Heifer calf, born January, 1907. Remained apparently healthy until February 13, 1907, when it was attacked with diarrhœa, which however, yielded to treatment in about eight days. Few days later became dull,

elevated temperature, cough at intervals. Cough gradually became more frequent, respirations more rapid; nasal discharge. Gradually became worse and died March 11, 1907.

Autopsy.—Tubercular lesions right lung; also in thymus gland which was full of miliary tubercles; few tubercles also in parenchyma of spleen.

(30b) Heifer calf born April, 1908, healthy and thrifty.

Tested without reaction September, 1908; February, 1909.

Has since remained healthy.

No. 31. *Ayrshire Cow.*—4 years.

Never showed clinical evidence of tuberculosis.

Tested without reaction October, 1905; September, 1906; May, 1907; October, 1907; September, 1908; February, 1909.

Has since remained healthy.

Progeny—

(31a). Bull calf born June, 1908, healthy and thrifty.

Tested without reaction September, 1908; February, 1909.

Has since remained healthy.

This disposes of the original herd. The following animals are those which, as has already been stated, were introduced to the herd from time to time during the course of the experiment.

No. 45. *Bloomer.*—Pure bred Ayrshire cow.

Arrived station June, 1906; never showed clinical evidences of tuberculosis.

Reacted November, 1905.

Doubtful reaction December, 1905.

Tested without reaction April, 1906; September, 1906; May, 1907.

Reacted October, 1907; September, 1908.

Slaughtered November, 1908.

Autopsy.—Tubercular lesions left lung, with area undergoing caseation, with communication to bronchial tubes. Caseating lesions anterior and posterior mediastinal, mesenteric and lymphatic glands.

Progeny—

(45a) Heifer calf born June, 1907, healthy and thrifty.

Reacted September, 1908.

Slaughtered October 20, 1908.

Autopsy.—Purulent lesion left post-pharyngeal gland. No other lesions detected.

No. 46. *Maggie II.*—Pure bred Ayrshire cow.

Arrived station June, 1906; in poor condition, wild, excitable and vicious. Later became quiet and improved in condition.

Reacted November, 1905.

Tested without reaction December, 1905; April, 1906; September, 1906; May, 1907; October, 1907.

Reacted September, 1908.

Slaughtered October 21, 1908.

Autopsy.—Tubercular lesions base of right lung; caseating, purulent, encysted; apparently an open case.

Progeny—

(46a) Heifer calf born April, 1907, healthy and thrifty.

Tested without reaction September, 1908; February, 1909.

Has since remained healthy.

No. 65. *Canada Regens.*—Pure bred French Canadian cow.—4½ years.
Arrived at station December, 1906; apparently healthy except for persistent cough.
Reacted September, 1906.
Doubtful reaction May, 1907.
Reacted October, 1907.
Reacted September, 1908.
Slaughtered October 21, 1908.
Autopsy.—Tubercular lesions in mesenteric glands. One lesion size of ostrich egg, involving a single gland and causing obliteration of the entire glandular structure. External portion of this mass was calcified: in the center a cavity about the size of a hen's egg containing a serous exudate. No other lesions.

No. 66. *Legacy.*—Pure Ayrshire cow, 5 years.
Animal arrived at station December, 1906, in fair condition, but never laid on flesh.
Reacted December, 1906.
Tested without reaction May, 1907; October, 1907
Reacted September, 1908.
Slaughtered October 18, 1908.
Autopsy.—Limited encysted tubercular lesions right lung. Caseated nodules in anterior mediastinal, posterior mediastinal and peribronchial glands: encysted nodules in peribronchial and few caseated nodules in mesenteric glands.

Progeny.—
(66a) Heifer calf, adopted December, 1907, healthy and thrifty.
Reacted October, 1907; September, 1908.
Tested without reaction November, 1908; February, 1909.
Slaughtered March 7, 1909.
Autopsy.—Caseated and calcified tubercular lesions in anterior mediastinal glands. No other indications of tuberculosis detected.
(66b) Bull calf born April, 1908, healthy and thrifty.
Tested without reaction, September, 1908.
Slaughtered October 22, 1908.
Autopsy.—No evidence of tubercular infection.

No. 67. *Maggie III.*—Pure bred Ayrshire cow, 3 years.
Arrived at station December, 1906. Unthrifty but no clinical evidence of tuberculosis.
Ceased Reactor.
Reacted December, 1906.
Tested without reaction May, 1907; October, 1907; September, 1908; November, 1908.
Slaughtered November 19, 1908.
Autopsy.—No evidence of tuberculosis detected.

Progeny.—
(67a) Bull calf born June, 1908.
Tested without reaction September, 1908; February, 1909
Has since remained healthy.

No. 68. *Denty Girl.*—Pure Bred Ayrshire cow 5 years.
Arrived at station December, 1906, in fair condition, but with persistent cough.
Reacted December, 1906.

Tested without reaction May, 1907; October, 1907
Reacted September, 1908.
Slaughtered October 18, 1908.
Autopsy.—No lesions of tuberculosis found in thoracic or abdominal cavities. Left popliteal gland caseated and purulent. Tubercular bacilli ties. Left popliteal gland caseated and purulent. Tubercular bacilli with.

Progeny.—

(68a) Heifer calf adopted, (transferred from Beatrice No. 7, January, 1907. on the death of that animal), healthy and thrifty.
Reacted October, 1907; September, 1908.
Tested without reaction November, 1908.
Reacted February, 1909.
Slaughtered March 6, 1909.
Autopsy.—Caseous tubercular lesions post pharyngeal glands. Caseous and calcified lesions in periportal gland. Calcified lesions in posterior mediastinal gland and in peribronchial glands.

(68b) Heifer calf born January, 1907, healthy and thrifty.
Tested without reaction July, 1907; November, 1907.
Has since remained healthy.

(68c) Bull calf born April, 1908, healthy and thrifty
Reacted September, 1908; February, 1909
Slaughtered February 19, 1909.
Autopsy.—One calcified tubercular nodule size of pigeon's egg, right posterior mediastinal gland.

No. 78. *Jersey Grade Cow.*—8 years.
Arrived at station January, 1907, in fair condition, but with persistent cough. Gradually lost flesh, cough becoming more troublesome, accompanied by nasal discharge.
Reacted May, 1907; October, 1907
Died July 31, 1908.
Autopsy.—Inflammatory peritoneal adhesions; kidneys enlarged and congested with hemorrhages in the parenchymatous portions; abdominal lymphatic glands, including mesenteric and periportal, involved in tubercular lesions, which were of two kinds; some wholly encysted and walled off from remaining glandular tissue; others recently formed, scarcely visible to the naked eye, with hemorrhages, apparently resulting from tuberculous septicemia. Fallopian tubes presented very advanced tubercular condition, the giant cells having been destroyed and each field of the microscope showing a mass of tubercle bacilli.

Progeny—

(78a) Bull calf born July, 1907, healthy and thrifty.
Reacted September, 1908; November, 1908; February, 1909.
Slaughtered March 6, 1909.
Autopsy.—Left postpharyngeal gland purulent and calcified.

No. 82. *Count Cedric.*—Pure bred Shorthorn bull, 2½ years.
Arrived at station July 4, 1907. Condition varied considerably; during fall of 1907 became emaciated, refused food; persistent high temperature; later improved, but never regained perfectly healthy appearance.
Reacted November, 1906; May, 1907; October, 1907; September, 1908.
Slaughtered October 22, 1908.

Autopsy.—Tubercular lesions in postpharyngeal, anterior and middle cervical glands, which were completely broken down and contained in each instance large quantity purulent material. Caseated lesions in anterior mediastinal gland. Carcass greatly emaciated.

No. 84. *Flossie's Gem.*—Pure Guernsey cow, 4 years.
Arrived at station May, 1907; showed no clinical evidence of tuberculosis.
Reacted May, 1907.
Tested without reaction October, 1907.
Doubtful reaction September, 1908.
Slaughtered October 18, 1908.
Autopsy.—Slight pleuritic adhesions not definitely tubercular. Tubercular nodules omentum, purulent tubercular lesions in postpharyngeal glands.

Progeny—
(84a) Heifer calf born October, 1907, healthy and thrifty.
Reacted September, 1908.
Slaughtered October 31, 1908.
Autopsy.—No evidence of tubercular infection.

No. 85. *Ottawa Fortune.*—Pure bred French Canadian heifer, 3 years.
Arrived at station May, 1907; unthrifty, but on definite symptoms of ing.
Reacted May, 1907.
Doubtful reaction October, 1907.
Slaughtered October 10, 1907.
Autopsy.—Tubercular lesions well marked, lungs badly affected, about one-quarter caseated, covered with nodules in grape formation. Much pleuritic adhesion; portal, mesenteric and lymphatic glands badly affected. Large nodules on liver.

No. 86. *Illuminata 3d.*—Pure bred Shorthorn heifer, 3 years.
Arrived at station May, 1907; unthrifty, but no definite symptoms of disease.
Reacted May, 1907; highest temperature 10 hours after injection, 107·6, with pronounced clinical disturbance.
(See note.)
Tested without reaction October, 1907.
Slaughtered November 25, 1907.
Autopsy.—No evidence of tubercular infection.

Progeny—
(86a) Bull calf born July, 1907; unthrifty but no clinical symptoms.
Doubtful reaction September, 1908.
Tested without reaction November, 1908.
Doubtful reaction February, 1909.
Slaughtered March 6, 1909.
Autopsy.—Slight pleuritic adhesion, which could not be considered as positive evidence of tuberculosis. Subsequent pathological investigation failed to give any confirmatory data.

No. 98. *Flora.*—Pure bred French Canadian cow, 5 years.
Arrived at station May, 1908. Never showed clinical evidence of tuberculosis.
Reacted May, 1908.
Doubtful reaction September, 1908; November, 1908.
Slaughtered November 19, 1908.

Autopsy.—Few localized lesions (tubercular), evidently recent and active in both lungs. Purulent lesions large and small beneath peritoneum at border of omentum, near attachment to stomach. Twenty of these tubercular abscesses, each containing thick, creamy pus. No other lesions detected.

Progeny—

(98a) Heifer calf born May, 1908, more or less unthrifty.
Reacted September, 1908; November, 1908; February, 1909.
Slaughtered March 6, 1909.
Autopsy.—No evidence of tubercular infection.

No. 99. *Grey Grade Steer.*—1 year.
Arrived at station May, 1908. No evidence of tuberculosis.
Tested without reaction May, 1908; September, 1908.
Slaughtered December 21, 1908.
Autopsy.—No evidence of tubercular infection.

No. 100. *Red Steer.*—1 year.
Arrived at station May, 1908. No evidence of tuberculosis.
Tested without reaction May, 1908; September, 1908.
Slaughtered December 21, 1908.
Autopsy.—No evidence of tubercular infection.

No. 101. *Guernsey Bull.*—Pure bred, 1 year.
Arrived at station September, 1908; showed no evidence of tuberculosis.
Reacted May, 1908; June, 1908.
Doubtful reaction August, 1908.
Reacted September, 1908.
Slaughtered October 31, 1908.
Autopsy.—Tubercular lesions undergoing caseation at base of both lungs; tubercular lesions in peribronchial glands.

No. 102. *Red Grade Heifer Calf.*
Arrived at station November, 1907, apparently healthy; no clinical evidence of tuberculosis.
Tested without reaction November, 1907; September, 1908.
Reacted February, 1909.
Slaughtered February 19, 1909.
Autopsy.—Tubercular lesions in anterior and posterior mediastinal glands; tubercular area about size of egg in right lung, containing caseated and and calcified nodules, with direct discharge into bronchial tubes.

No. 103. *Jersey Cow.*—Pure bred, 5 years.
Arrived station September, 1907, in fair condition, but persistent cough.
Reacted October, 1907.
Slaughtered October 10, 1907.
Autopsy.—Tubercular lesions well marked; portions of lung tissue solidified. Large areas caseated; numerous cavities containing pus; tuberculous nodules liver and pleura and in portal and mesenteric glands.

A reference to the list will show that cows Nos. 1, 5, 8, 14, 19 and 67 are classed as 'Ceased Reactors.' The post-mortem findings in these cases will be found especially interesting.

Three other cases (Nos. 9, 11 and 16) classed as 'Clinical,' also ceased to react, apparently owing to the disease having become generalized.

Eleven animals (Nos. 4, 5, 6c, 8a, 15, 15a, 29a, 67, 84a, 86 and 98a) reacted but failed on post-mortem examination to show any evidence of tuberculosis. Such cases

are, as is well known, not at all uncommon. They furnish no argument against the reliability of tuberculin, but rather the opposite, occurring as they do in animals in which the disease is either of very recent origin or in which the lesions are so small or so deeply seated in unusual locations as to render their detection a matter of great difficulty. A striking instance of the last-mentioned condition is furnished by No. 68, in which the disease was confined to one popliteal gland.

The history of No. 86, although short, is very interesting and instructive. The pronounced reaction shown by this animal in May, 1907, would appear to indicate that the infection in her case was recent and very slight, while her subsequent record suggests the possibility of the progress of the disease having been at least temporarily arrested.

Of the two animals which died of tuberculosis, namely Nos. 30a and 78, one was a calf of two months in which the disease was probably congenital; the other, an aged Jersey cow, had reacted three times, the last test being ten months before death.

Special attention is directed to No. 4a, which, on being slaughtered on February 19, 1909, when over two years old, was found badly affected with tuberculosis, although it had never shown any evidence of disease and had been tested four times without reaction, the periods elapsing between the tests being ten, six and three months respectively.

This case is both interesting and instructive, showing as it does that an animal, while still retaining externally the appearance of health, may within a comparatively short period, become affected to such an extent as to nullify the action of tuberculin. Giving this heifer the benefit of the full period of incubation possible, as stated by our best authorities, namely, fifty days, the disease must, to all appearance, have been contracted not more than five months before the last test to which, as has been shown, there was no reaction.

Among the most noteworthy cases may be mentioned No. 17, an animal which was always fat, and which was expected to make excellent beef, but whose carcase was condemned for generalized tuberculosis. In view of the actual conditions revealed by the post-mortem, the doubtful reaction obtained from this animal a month before slaughter is particularly interesting.

The individual record of No. 22 is also instructive, especially when the history of her dam, No. 11, is taken into consideration.

The exceedingly well marked reactions given by No. 28, "Togo," at each time of testing are noteworthy, in view of the comparatively slight lesions found on post-mortem.

Perhaps the most striking feature of the whole experiment is the fact that sixteen mature animals (Nos. 2, 3, 4, 6, 12, 13, 15, 18, 20, 29, 30, 45, 46, 66, 68, 84) which positively reacted in from one to four tests became ceased reactors, but subsequently reacted again. In two of these animals the autopsy failed to reveal any evidence of tuberculosis, while in another the results were doubtful.

All the thirteen others were found to be diseased, although the degree of infection varied very greatly.

Special attention is directed to the post-mortem findings in No. 68. The diseased popliteal gland which was the only evidence of tuberculosis found would scarcely have been detected in the ordinary abattoir inspection and might easily have been missed in even a reasonably thorough post-mortem examination.

The fact that a number of these animals failed to react to the same test, and that their subsequent reactions also occurred simultaneously may suggest to some minds the possibility of these apparent eccentricities being due to a variation in the tuberculin used or to some peculiar condition affecting the test.

It must be remembered, however, that not only did several mature animals, among which may be specially mentioned Nos. 10, 28, 65 and 82, react regularly to the tests to which these others failed to respond, but that many other animals, as will be seen from their individual records, also reacted to one or more of these tests.

Exclusive of those born dead, of which there were several, and those which died from causes other than tuberculosis, the number of calves entering into the experiment was fifty-two (52). Of these forty (40) belonged to the original herd, thirty-three (33) being progeny and seven (7) adopted, while of the remaining twelve (12) two (2) were adopted, and ten (10) the offspring of the cows subsequently introduced.

Of these, twenty-nine (29), comprising twenty-five (25) of the original herd, and four (4) from the added stock, escaped infection; twenty-one (21) contracted tuberculosis, and two (2) (Nos. 29a and 86a) were suspicious, having given doubtful reactions, but no evidence of disease on post-mortem examination.

No. 4a gave ample evidence of infection on post-mortem, without having at any time reacted, while Nos. 6c, 8a, 15a, 84a and 98a reacted positively, but gave no post-mortem proof of infection.

Giving one of the two (2) doubtfuls to each, gives us approximately 60 per cent of healthy calves as against 40 per cent. infected.

Of the calves born of the original herd, twenty-two (22) escaped infection, ten (10) became diseased, and one (1) remained doubtful, the proportion of healthy calves in this lot being therefore about 66 per cent, a showing somewhat worse than was anticipated, when in September, 1908, the experiment being then unfinished, I stated that twenty-five per cent (25 per cent) of the calves of these particular cows were likely to prove diseased.

Of the adopted calves three (3) only remained healthy, while six (6) proved to be infected, thus exactly reversing the percentage given above in the case of the calves born of the original herd.

Of the calves born of the cows brought to the station subsequent to the arrival of the original herd, four (4) only escaped infection, while five (5) became diseased, and one (1) was classed as doubtful. The percentage of diseased animals in this case was also much larger than in the original herd, a result which is not surprising, when the large number of advanced clinical cases of tuberculosis among the dams is taken into account.

Of the calves, seventeen (17) in all, which remained healthy and alive at the close of the experiment, three (3) were born in 1905; five (5) in 1906; three (3) in 1907 and six (6) in 1908.

Of the thirteen (13) which failed to react, and were found healthy on slaughter, six (6) were over two years old, five (5) were over one year, and two (2) were six months old.

Summarizing the results of the experiment, on the lines laid down at its inception, it will be seen that, even under the limitations attributable to the removals and additions which were unfortunately permitted, these results are not entirely valueless.

So far as the effects of open air treatment on the animals themselves is concerned, it may be noted that among the members of the original herd, five (5), namely, Nos. 1, 5, 8, 14 and 19, ceased to react; that in one of these, Nos. 5, the post-mortem examination revealed no evidence of disease, while in No. 8 the slight lesions found were all encysted. The conditions in Nos. 1 and 14 were less satisfactory, while that of No. 19 was decidedly discouraging.

Among the added cows will be found another, No. 67, which, entering the herd in December, 1906, also became a ceased reactor, and in her case the autopsy failed to reveal the existence of disease.

As has already been stated, eleven (11) cows of the original herd and five (5) of those added later also became ceased reactors, but afterwards began again to react. The fact that in three of these, Nos. 4, 15, and 29, no satisfactory evidence of tuberculosis was found on post-mortem, suggests a recent reinfection. Whether or not the recrudescence of the disease which had apparently taken place in all the others of this lot, was due, as I have already suggested, to reinfection from the very virulent clinical cases introduced from outside, can only remain a matter of conjecture.

During the three years that the experiment was in progress, only one animal of

the original herd, namely No. 11, actually broke down. This case showed clinical symptoms almost immediately after arrival and only lived a little over a year. She might, therefore, almost be classed with a number of the later arrivals which really came to the station only to die and were never considered as being of any experimental value.

Judging from the conditions found on post-mortem a number of the other members of the original herd would, very shortly, have become active clinical cases.

The evidence on the whole leads to the conclusion that open air treatment is not likely to exercise any marked curative influence on animals already tuberculous, especially when reinfection is possible through cohabitation with clinical cases.

So far as concerns the securing of information regarding the extent to which healthy cattle kept in contact with diseased cattle are subject to infection, the experiment has proven of but little value. Had the seven healthy steers slaughtered in the fall of 1907, been allowed to remain with the herd throughout the whole experiment, the results would have been more interesting and valuable. It is true they lived for over two years in close contact with tuberculosis cattle without becoming infected; on the other hand, as most of the infection and reinfection, if such took place, apparently occurred during the year 1908, the fact that their slaughter took place when it did was very regrettable.

Of the other healthy animals, No. 31, a member of the original herd, was between October, 1905, and February, 1909, tested six times without reaction, and has since remained healthy, as has also her one calf; on the other hand, No. 22, which also came with the herd, after passing four tests without reaction, gave a positive reaction in February, 1909, and on post-mortem showed very clear evidence of recent tubercular infection.

Nos. 99 and 100, which entered the herd in May, 1908, and which were twice tested without reaction, showed on slaughter in December, 1908, no evidence of tubercular infection.

No. 102, however, which entered the herd in November, 1907, and which also underwent two tests without reaction, reacted positively in February, 1909, and when slaughtered showed distinct evidence of tubercular infection.

A careful scrutiny of the individual records of the calves reared on the station will reveal a very few cases which might indicate that infection possibly took place after weaning. Most of the calves, however, which became diseased, reacted at such an age as to indicate that they derived the infection direct from their dams.

In view of all the circumstances the evidence derived from this experiment, as to the likelihood of animals becoming infected under open air conditions, is of no great value.

The proportion of healthy calves raised from the whole herd, namely 60 per cent, is at first sight somewhat discouraging, but when it is remembered that, with one exception, No. 31, all the cows on which they were reared were affected with tuberculosis, that one had a tuberculous udder, and that a number of the others were open and clinical cases, the matter assumes a somewhat different aspect. It is, I think, highly improbable that such a large percentage of healthy calves could have been obtained from a herd of the same kind under ordinary stable conditions.

In conclusion, I would say that while the results derived from this experiment are on the whole somewhat disappointing, they are not without value, inasmuch as they furnish a good deal of useful information regarding the eccentricities of bovine tuberculosis, as well as on the use of tuberculin for diagnostic purposes.

I have the honour to be,

sir,

Your obedient servant.

J. G. RUTHERFORD,

Veterinary Director General and Live Stock Commissioner.

SESSIONAL PAPER No. 15b

APPENDIX No. 19.

INTERNATIONAL INSTITUTE OF AGRICULTURE.

J. G. Rutherford, V.S., H.A.R.C.V.S.

Ottawa, March 31, 1909.

Sir,—I have the honour to present my report as delegate from Canada to the Permanent Committee of the International Institute of Agriculture covering the period between the date of my appointment in May, 1908, and the last meeting of the Committee in November of the same year.

Although I was also a delegate to the General Assembly, I have not touched upon the proceedings of that body, with which you, as head of the Canadian delegation and vice-president of the Institute itself, are entirely familiar.

As you have informed me that you propose to deal in your annual report with the origin of the Institute and the earlier stages of its history, prior to the holding of the first regular meeting in May, 1908, I will, therefore, confine myself to a brief relation of my own experiences as a member of the Permanent Committee, and to such comments and remarks on the organization and work of the Institute as, in my opinion, are most worthy of note.

Leaving Ottawa on May 7, I proceeded to London, where through the courtesy of Lord Strathcona, High Commissioner for Canada, I was promptly put in touch with Lord Carrington, President of the British Board of Agriculture, and with other officers of his department interested in the work of the Institute.

I found that Sir Thomas Elliott, Permanent Secretary of the Board, and also the official delegate of Great Britain and Ireland, had already gone to Rome. As the date fixed for the first meeting of the Permanent Committee, namely May 23rd was rapidly approaching, I remained in London no longer than was absolutely necessary, and starting on the 19th, reached Rome on the evening of the 21st.

Immediately upon my arrival I presented my credentials to Sir Thomas Elliott, who, having been a member of the British delegation which attended the first meeting called in 1905 by His Majesty, the King of Italy, to consider and discuss the original project, was familiar with every phase of its history. He very kindly and courteously then and thereafter, extended to me the full benefit of his knowledge and experience, which, I need scarcely say, were of the greatest possible value, giving me, as they did, a grasp of the whole situation, which otherwise would have been difficult if not impossible of attainment.

I soon found that, as usual, when many men of many minds, and especially of many nations, are gathered together to discuss any project, there were many opinions, and many points of view. The natural tendency to divergence of thought under such circumstances, was in this case accentuated by the fact that the scheme under discussion was one of the most remarkable and extraordinary which had ever been proposed in the whole history of mankind.

That all the civilized nations of the world should unite in forming a cordial commercial union, for the purpose of conducting jointly a business office, and that in the Eternal City itself, was unquestionably a proposition to make men think. As the thinking was in full swing and was being done by thoughtful men, whose minds had all been trained in different schools, and whose views were coloured by their national,

to say nothing of their individual characteristics and environment, it is not surprising that the viewpoints varied widely, and that there were many different conceptions of the future work and wellbeing of the International Institute of Agriculture.

Ideas were in the melting pot and although the furnace was not yet in full blast, the process of solution had already begun.

Conferences were constantly being held, and discussions more or less animated, according to the national temperaments of those taking part, were everywhere in evidence.

It was soon apparent that unless the delegates of the greater nations could be brought to agree upon some line of policy reasonably definite and mutually satisfactory, before the actual meetings began, there would be more argument than action and but little hope of a logical outcome. Fortunately for all concerned, the delegates from the larger and more important countries were, almost without exception, men of sound sense, good judgment, and more or less diplomatic experience.

This being the case, compromise became the order of the day, and by giving here and taking there, the adoption by these gentlemen of a general policy, so far at least as the initial steps were concerned, was soon rendered possible.

On Saturday, May 23rd, the Institute was formally opened by His Majesty the King of Italy, Victor Emmanuel III, who was accompanied by the Queen and his Imperial suite, as also by many members of the Italian government and other prominent personages.

The opening took place in the magnificent building in the Villa Borghese, specially erected by His Majesty for the accommodation of the Institute.

This building, which was at that time scarcely completed but which was almost finished at the time of the later meeting in November, is an exceedingly handsome and commodious structure. From an architectural point of view, it leaves nothing to be desired, while it is sumptuously furnished and decorated throughout with fine specimens of modern Italian art. Its situation is excellent, commanding a beautiful view of St. Peter's and the Hills across the Tiber.

Speeches of congratulation on the successful opening of the Institute were addressed to His Majesty by M. Signor Tittoni, Minister for Foreign Affairs; Senator Count Faina, President of the Royal Commission, and His Excellency M. De Carvalho e Vasconcellos, Portuguese Minister at Rome, who, as the oldest member of the Diplomatic Corps had been selected to speak on behalf of the Foreign delegates.

In these addresses, as was perhaps natural under the circumstances, His Majesty the King of Italy was given the entire credit for the formation of the Institute, although among the delegates from other countries there was a very general feeling that the name of Mr. David Lubin, who first conceived the idea of such an international organization and to whose energy and enthusiasm its actual realization was due, might at least have been mentioned.

On Monday, May 25, the Permanent Committee met for the first time in one of the fine rooms of its new palace. The following is a list of the delegates present, the names of the countries being arranged alphabetically:—

Argentine Republic—His Excellency M. R. Saenz Pena, Argentine Minister of Italy.

Austria—M. le Chev. de Pozzi, Statistician to the Imperial Department of Agriculture.

Belgium and Luxemburg—M. O. Bolle, Director of the Department of Agriculture.

Bulgaria—M. C. Seraphimoff, Governor of the Agricultural Bank of Bulgaria.

Chili—M. L. S. Rodriguez, Consul General for Chili at Rome.

China—M. Tching Sound Tchai, Secretary of the Chinese Legation at Rome.

Costa Rica—M. R. Montealegre, Costa Rican Minister at Rome.

Cuba—M. C. de Pedroso, Chargé d'Affaires de Cuba pres le Gouvernement Italien.

Denmark—M. H. H. Konow, Danish Consul at Rome.

Egypt—His Excellency Boghos Pascha Nubar.

France—M. Louis Dop, Asst. Chief of the Cabinet, Dept. of Agriculture, Paris.

Great Britain and Ireland—Sir Thomas Elliott, K.C.B., Permanent Secretary of the British Board of Agriculture, London.

Australia—M. J. W. Taverner, Agent General for Victoria in London.

Canada—M. J. Gunion Rutherford, Veterinary Directer General and Live Stock Commissioner.

India—Sir Edward Buck, K.C.S.I.

Germany—Dr. Mueller, Member of the Upper Council.

Hungary—M. E. Miklos de Miklosvar, Former Secretary of State for Agriculture, and Member of the Upper House.

Italy—M. le Count E. Faina, Senator du Royaume.

Japan—M. M. Kameyama, Charge d'Affaires for Japan at Rome.

Mexico—M. G. A. Esteva, Mexican Minister at Rome.

Montenegro—M. G. Volpi, Director General of Monopolies of the Principality.

Netherlands—M. H. J. Lovink, Director General of Agriculture.

Norway—Dr. A. Fjelstad, landed proprietor and farmer.

Portugal—His Excellency M. de Carvalho e Vasconcellos, Portuguese Minister at Rome.

Roumania—M. Fleva Nicholas, Roumanian Minister at Rome.

Russia.—M. le Baron M. Korff-Schmising, Member of the Russian Embassy at Rome.

Spain—M. Echeverria Auguste.

Sweden—M. le Baron, C.N.D., de Bildt, Swedish Minister at Rome.

Switzerland—M. J. B. Pioda, Swiss Minister at Rome.

Servia—M. B. J. Soubotitch, Secretary of the Servian Legation at Rome.

United States of America—M. David Lubin.

The proceedings were opened by M. Pompilj, Under Secretary of State for Foreign Affairs, who briefly welcomed the delegates on behalf of His Excellency Signor Tittoni, Minister of Foreign Affairs, who was unfortunately ill and therefore prevented from attending in person. M. Pompilj asked that the delegates proceed to nominate a president and vice-president to the Permanent Committee, who might immediately enter upon their duties.

In reply His Excellency M. de Carvalho e Vasconcellos, delegate for Portugal, Dean of the Diplomatic Corps in Rome, who had, at an informal meeting of the delegates, been selected to speak on their behalf, expressed thanks for the courteous reception which had been extended to them by His Majesty the King of Italy and by His government, and great regret that His Excellency Signor Tittoni was unable to be present. He then proposed the name of Count Faina, the delegate for Italy, as president of the Permanent Committee of the International Institute of Agriculture, adding that he felt sure that in so doing he was expressing the unanimous sentiments of his colleagues.

Count Faina having been elected by acclamation, and having on motion, taken the chair, expressed his thanks to the assembly for the honour of his selection to direct the work of the committee, and the hope that, with their assistance, he would be able to justify the confidence which they had reposed in him. He then suggested the name of M. E. Koch, representative of His Majesty the King of Italy, and who had been, from the first, intimately connected with the work of the Institute, as a most suitable person to fill the office of Secretary General. This proposal was immediately adopted by the committee.

The President then announced that two matters remained to be dealt with, namely the selection of a vice-president, and the choice of an official language.

Upon motion of M. Louis Dop, delegate for France, supported by Sir Thomas Elliott, delegate for Great Britain and Ireland, it was agreed that the nomination of a vice-president should be postponed until all the adhering countries had named their proper official representatives.

The question of the official language to be used in the meetings of the committee evoked considerable discussion in which many of the delegates took part. It was finally decided that French should be the official language of the Permanent Committee, but that delegates might be permitted, as an exception, to use another language in debate.

It was also decided that delegates should be permitted to introduce technical experts to assist them in their duties by explaining special matters, and should occasion require, by acting as interpreters.

The real business of the meeting then began.

With the view of facilitating matters, the Italian Government had, through a specially appointed Royal Commission, prepared a project for the work of the Institute, copies of which had been previously sent to the governments of the adhering nations. This project, while expressing the views of Italy, found but little favour in other countries, inasmuch as in many respects, it was not in strict accordance with the provisions of the international agreement reached in 1905.

Many of the delegates had come to Rome with definite instructions to oppose this Italian project. The Government of France had devoted special attention to the subject, and had prepared a lengthy and comprehensive minute, which, while expressing the most friendly spirit towards and kindly interest in the Institute, pointed out that it would be impossible for the French representative to agree to many of the propositions embodied in the Italian project. In this minute the views of France were clearly and concisely set forth, and were undoubtedly entirely consistent with the terms of the convention.

The instructions of many other delegates were generally in accordance with the views of France, and the Italian project was finally rejected as a basis of discussion, its place being taken by a new project, prepared, so far as the first meeting was concerned, by a special sub-commission selected from among the delegates to the Permanent Committee.

A copy of this will, I presume, be embodied in the historical portion of your own report. This being the case, I have not thought it advisable to reproduce here either the Italian project, or the French criticism of that document.

The debate which led up to the appointment of the special sub-commission, above referred to, was very interesting, and, as it embodies in full the opinions of the French and German delegates, and, in this way, throws much light upon the objects of the Institute, I have thought it advisable to include it in my report.

On the following day, May 26, M. Lovinck, delegate from the Netherlands, proposed the following resolution:—

'Whereas, it will be necessary to convoke the General Assembly of the International Institute of Agriculture during the current year, in order that the Institute be not delayed in exercising its proper functions; and

Whereas, having this in view, it would be desirable to present to the adhering governments, as soon as possible, a definite plan of organization, and a programme of the work to be done, in order to give them time to approve the same and to give the necessary instructions to their respective delegations; and

Whereas, the Permanent Committee would find itself confronted by grave difficulties if it attempted to deal with all the details of a definite project in the course of general discussion;

Therefore the Permanent Committee after having summarily discussed the project presented by the Royal Italian Commission, resolved as follows:—

First—To name a Commission ad hoc, composed of twelve members and charged with the preparation of the details of the plan of organization and of the operation of the Institute, taking into account the wishes and proposals expressed in the general discussion, as also the Italian project. (Members of the Permanent Committee from each country to have the privilege of taking part in the sittings of the Commission.)

Second—To ask the Commission to work in such a manner that the propositions relative to the organization of the programme of work and to the financial budget might be submitted with the least possible delay to the Permanent Committee.'

He presented at the same time, a list of twelve delegates whom he suggested as members of the Commission.

M. Louis Dop, delegate from France, explained the reasons why he could, so far as he was concerned, accept the proposition of M. Lovinck only on condition that all the members of the Committee might be admitted to take part directly in the work of the Commission, and asked that the nomination of the Commission should be deferred until the Permanent Committee had finished the general discussion of the plan of organization of the Institute.

M. Fleva, delegate from Roumania, while fully appreciating the arguments advanced by M. Dop, pressed the Committee to divide the two questions. He proposed to enter immediately into a general discussion of the Italian project, and to reserve until afterwards the question of the names of the Commission.

M. Louis Dop, delegate for France, agreed and together with M. Lovinck, submitted to the Committee the following proposition:—

'The Permanent Committee resolves to proceed to the general discussion of the plan of organization, taking for a basis, the project prepared by the Royal Italian Commission.'

M. De Carvalho e Vasconcellos, delegate for Portugal, emphasized the necessity of having rules of order and proposed to adopt, as provisional, those used in the discussions of the International Conference of 1905.

The President, after reading the Rules of Order of 1905, pointed out that some of these were not applicable to the present case.

The proposition of the Portuguese delegate was, however, unanimously accepted.

The general discussion upon the Italian project was opened by M. Louis Dop, delegate from France, who spoke as follows:—

'The government of the French Republic, which has done me the honour of appointing me as its delegate to the International Institute of Agriculture, took part in the most thorough and active fashion in the initial steps for the creation of this Institute in June, 1905.

France is proud and happy in the thought that most of the propositions made by her in the conference of 1905, were accepted, to form, with the consent of the adhering states, the Articles of the final Act, which, to-day, governs our proceedings.

The prominent part which my country played in 1905 in furnishing a happy solution of the problem which was submitted to the deliberations of the conference, imposed on France the direct duty of manifesting, from the beginning, her intention of co-operating steadily in the grand work for which we are now gathered here. This is the reason why the government of the French Republic has, as in honour bound, assumed the agreeable duty, of nominating a permanent delegate to the International Institute of Agriculture from the moment of its being notified of the meeting of the Permanent Committee.

It is for me an honour to represent here the agricultural interests of France. This great honour confers upon me at the present moment the pleasure of interpreting faithfully the sentiments of profound gratitude which fill the hearts of all the

French people for the noble initiative of His Majesty the King of Italy, Victor Emmanuel III. This sentiment of appreciation will remain in the hearts of my compatriots the good peasants and farmers of our beloved France eternally, like the great royal work which is to-day crowned with success in so complete a fashion.

France experiences also a sweet emotion at the thought that the generous initiative of the beloved sovereign of a beloved nation has conferred upon humanity a new instrument of union, of universal peace and concord. We must to-day assure ourselves of the proper progress and operation of this instrument.

Animated as we all are with a lively desire and firm wish to have our respective countries benefited by the new institution, we must be inspired in the performance of our duties by the spirit of understanding and solidarity, and the sentiments of devotion to our united interests, which have animated the Royal Italian Commission and its eminent President, Count Faina.

In the name of France I proffer to our sympathetic President and the members of the Commission which he has directed with so much ability and distinction the homage of gratitude.

I would fail also in a very agreeable duty if I did not observe that our very distinguished Dean, His Excellency the Portuguese Minister, M. de Carvalho e Vasconcellos has interpreted faithfully and eloquently our common sentiments. I trust that he will permit me to proffer him the sincere thanks of my country, as I also address them to our excellent colleague and friend M. Lubin, whose generous and far-sighted idea permits us to-day to know each other better and therefore to esteem each other more.

We must not however permit ourselves to believe, gentlemen and dear colleagues, that our institution is a mutual admiration association; now that the duties of gratitude have been accomplished we must go to work with a view of showing to the farmers of the entire world that we are fully conscious of, and have a definite idea of our duties and of the responsibilities which rest upon us.

What should be our method of work? What principles should direct our efforts in searching for a satisfactory and early solution of the problem submitted to us?

Gentlemen, the beauty of this palace which we owe to royal munificence is emphasized and illumined by a series of happy mottoes which remind us that Italy is also the land of classics to which we owe the greater part of our intellectual culture.

In order to inspire and direct our labours I would have wished to suggest to the able architect of this palace that a motto, less literary but more symbolical, should have been inscribed on the wall of the chamber which shelters us and our duties.

The sentence which I have in mind is a synthetical and concise expression of the decisions of the Conference of 1905, namely:

'The Institute is a State Institution.'

From these words is derived the essential principle contained in the last paragraph of Article 9:—

'All questions relating to the economic interests, the legislation and administration of any particular state, must be excluded from the sphere of the Institute.'

These two great fundamental principles constitute the very spirit of the final act of the Conference of 1905.

It follows therefore that we must consider this Act as a constitutional charter, a guarantee of our independence and our liberty, a charter to inspire, to direct and to limit our decisions and our acts.

From the point of view of the French Government, all the decisions of the Permanent Committee should flow from these sources, as a corollary follows the demonstration of a given theorem.

We are here, gentlemen and dear colleagues, in an assemblage where science, pure and simple, should be the inspiration of all our acts.

You will therefore regard as only natural my endeavour to apply to our work the method of Descartes, which can be perhaps for us a guiding thread through the labyrinth of ideas and projects arising from the problems submitted to our deliberations.

The essential principle of the Cartesian method is, as you are aware, that of elimination.

Let us then eliminate from our programme everything which is not strictly included within the letter and the spirit of the final act of 1905.

What must we eliminate?

(1) The details of the organization and operation already provided for in the Convention of 1905;

(2) The details of operation incompatible with a state institution, as for example, official or private correspondence of the Institute, taken from sources other than official or those under official control;

(3) All the details of organization and of registration of agricultural labour outside of the special case of the rates of pay expressly provided for by the Act of 1905;

(4) All acts or decisions empowering the Institute to initiate meetings of private associations;

(5) Any intermediary role between associations or co-operative societies;

(6) Every procedure which might possibly confer on the Institute the power of communicating with States, otherwise than through the medium of official delegates, or to receive directly information from private associations, otherwise than through the official medium of governments.

Such is, gentlemen, in the opinion of the French government, the negative part of our programme so far as refers to scientific questions, an opinion which I shall have the honour to explain and defend, as the various questions come up for discussion.

But have no alarm gentlemen; the programme conceived by the French government will not be a negative programme.

Our scientific method of elimination can only result in the adoption, according to the Pasteur school, of a method of reconstruction, capable of giving body and soul to the different living elements.

Let us then adopt, for the formation of the concrete and practical part of our programme, the experimental method, which is alone capable of keeping us free from self deception, and of assuring the ultimate success of our decisions.

If we rigorously apply this method, we need only provide for the Institute such working parts as will enable us to immediately attain our purpose.

Now experience and reason teach that the only goal immediately attainable is the grouping or amalgamation at the Institute of all the statistics gathered by the different countries, possessing at the moment an official service of agricultural statistics and information.

A majority of the great States of Europe and America have already organized in their respective countries such offices of statistics and information.

Let us confine ourselves for the moment to the creation at Rome of a Bureau of centralization, of comparison and of unification of these different informations. In doing this we shall have already accomplished a very important work sufficient in any event to occupy, during its first stages, the energy of the Institute.

Let us leave to the future the care and development of the seeds sown in a fertile and well prepared soil.

'Let us be modest' is the formula of our success.

Let us study to confine our ambition to results easily and speedily realized. Let us consider only as a desirable, but at present an unattainable ideal, the various functions of acting as an intermediary between associations, of acting as a Bureau of emigration, as an inspirer of congresses, as a regulator of prices and markets, or in the

formation of unions and federations among associations and co-operative societies, etc., such as some generous spirits would wish to have our Institute undertake.

Let us, for the present, leave these functions to the different States and leave to the statistics which we shall publish and to the farmers who will read them, the task of drawing practical conclusions which these official statements contain.

As regards the practical organization of our offices, the French government would willingly agree from the inception of the work of the Institute, to the formation of five bureaux, as follows:—

(1) Bureau of the Secretary General; internal administration; staff and material; accounts.

(2) Library, archives, printing, distribution of printed matter, department of publications, bibliography.

(3) Bureau of agricultural statistics, charged with paragraphs (*a*), (*b*) and (*c*) of Article 9 of the Convention.

(4) Bureau of plant diseases charged with paragraph (*d*) of Article 9 of the Convention.

(5) Bureau of co-operation, of assurance and of agricultural credit, charged with paragraphs (*e*) and (*f*) of Article 9 of the Convention.

Such are, gentlemen and dear colleagues, the scientific principles which have inspired and directed the precise instructions which I have received from the French government, with the view of reaching rapidly a practical and easily attainable result. I am persuaded, gentlemen, that we will be wise enough to take as an inspiration that great and generous motto the "unita d'intento," which, at the call of Mazzini, enabled Italy, this great and noble nation, to realize her unity.

We also will be wise, gentlemen, to realize this "unita d'intento" which, according to the poetic expression of our distinguished and sympathetic President, Count Faina, will enable us to put into practice human solidarity, and we shall see dawn the long wished for day when the different social classes who labour together in the cultivation of the soil shall unite in garnering the wheat.

Gentlemen, and dear colleagues, will you excuse me? I have been perhaps a little long and the weather is warm.

We, however, who represent the toilers of the soil, do not fear the heat. With the great poet Carducci, we love the rays of the bright sun of Italy, whose rays fertilize and fecundate the heavy labours of the workers of the fields, and whose same beams will also reward our earnest efforts with a rich harvest of blessings of which, later, humanity will be proud."

At the afternoon session, Dr. Mueller, delegate for Germany, spoke as follows:—

'Gentlemen, it is my duty to first declare that I share entirely, as do we all, the sentiments of appreciation towards His Majesty the King of Italy, the Italian government, the Royal Commission, and above all towards our President, sentiments which M. Louis Dop has interpreted in a manner so eloquent and sympathetic.

In my opinion the object of our discussion is to give suggestions to the Commission, which we are about to name. This is my reason for explaining the points of view which will guide me in taking part in the work of the Permanent Committee, with, I may add, the entire approval of my government, which leaves me otherwise quite at liberty to seek, in common with my colleagues, the means necessary and useful to develop our Institute and, in a word, to protect and second the common agrarian interests of all the countries which have adhered to the International Institute.

I believe that the most important work of the Institute will be the organization of a service of information concerning the extent of cultivated land, the crops, the prices of and commerce in the principal agricultural products.

I have no doubt that this service, if well organized, will immediately be of great advantage to the interests of farmers and to the general economy of the whole world.

This service being the most important of all those authorized by Article 9 of the Convention, I am of opinion that the greater part of the material and personal forces of the Institute, should from the first, be devoted to its inauguration.

For the other services, it will be sufficient to collect exact data upon practical and scientific progress throughout the world and to distribute them as widely as possible by publications, either periodical or as often as it is thought necessary.

As regards the work of the Institute in general, I believe that it will be necessary to confine ourselves strictly to the provisions of Article 9 above mentioned, although this will not prevent us from giving our attention to questions which, while not literally enumerated in that article, are without doubt therein implied.

As for the data which are to be placed by each state at the disposal of the Institute, it is absolutely neeessary, in my opinion, that these must be authentic, rapid and punctual, and that consequently there can be only taken into consideration data of which the authentieity is recognized by the state communicating them.

As for the operation of the Institute, I think it is necessary, to utilize the scientific and practical experience and the special methods of work of the different nations, an international principle from which we have already profited in forming the Permanent Committee, and which should also be of great use in the composition of the different bureaux.

As for the organization of the bureaux, with the view of simplifying our work as much as possible, I believe that it will suffice for the present, to form three divisions, namely:—

(1) Division of the Secretary General, which will take charge of the general administration, the library, the publications, accounts, and of the supervision of the staff.

(2) Division for the securing of information regarding the principal agricultural products and plant diseases.

(3) Division dealing with information regarding economic and social institutions and questions concerning manual labour.

Lastly, with the view of ensuring the effective co-operation of persons of outstanding ability, I believe that it will be useful to put the three chiefs of divisions under the direct control of the Permanent Committee.'

After Chevalier de Pozzi, delegate for Austria, had expressed his sympathy with the views of Dr. Mueller, M. E. Miklos de Miklosvar, delegate for Hungary made, in his turn, the following declaration:—

'Our International Institute of Agrieulture, divested of all political considerations, will serve, I am sure, as a bond of union between the peoples, rendering their relations more cordial, and assuring an extension of the ideas of co-operation and mutuality, the application of which to agriculture appears to be the characteristic of modern times and the principal cause of the greater part of the progress which has been made.

The role of the International Institute may be in the future very considerable, but it is necessary that our activity be limited at the commencement, that we walk slowly but surely, and that we hold strictly to the provisions of Article 9 of the Convention. 'He who goes slowly goes safely,' says the Italian proverb. Let us never lose sight of the fact that we must always remain on a solid foundation and that we can only work with the aid of correct and controllable data furnished by the different governments.

We shall have nothing to fear if we travel a path solid and well defined.

Our business will go without difficulty if God is our help and science our guide.

As regards the internal organization of our Institute and its operation, I am convinced by the forces of facts, as also by my personal knowledge of different countries that we can for a beginning, concentrate our work in two great divisions, namely:—

(1) Agrarian information.

(2) Agrarian questions and institutions of economic social nature.'

Sir Thomas Elliott, delegate for Great Britain and Ireland, declared that he fully shared the ideas set forth by his colleagues of Germany, Austria and Hungary, and believed also that the functions of the Institute should above all be devoted to the securing of statistics, but that it was very necessary to distinguish between statistics of a static order and statistics of a dynamic order.

He hoped that the Institute would confine itself to these last, that is to say to living statistics. This would be the surest way of observing in its true spirit the Convention of 1905.

The President thanked the delegates for the kind words which had been pronounced in reference to him, and with a view to answering in a complete fashion the remarks which had been made, asked M. Louis Dop, to indicate point by point the difference which existed between the project of the Royal Italian Commission and the ideas of his government.

M. Louis Dop, delegate from France, remarked, firstly, that the Italian project reproduced the articles of the Convention of 1905, and pointed out that the reproduction of these articles was useless.

Upon the declaration of the President that these articles were not an exact reproduction of the articles of the Convention of 1905, M. Louis Dop asked in the most formal manner that the articles of the Italian project might be considered in such a way as to preserve in future discussions the full force of the article of the final Act of 1905. He expressly requested that this reservation should be inserted in the minutes.

The President stated that in order to conform to article 5 of the Convention quoted, it would be necessary to prepare a project of organization and operation for the Institute.

Article 8 of the Convention stated that the Committee makes its own rules of order. The Royal Commission believed that for the rules of order of the Permanent Committee it was best to hold closely to the procedure fixed by the Convention. This, however, does not imply a renewal of the discussion of these principles. On the contrary their reproduction should be considered as a confirmation of their full strength. He was quite satisfied that he would be given an opportunity of explaining to the Assembly that the intention of the Royal Commission was not and should not be considered a modification in any way of the letter or the spirit of the Convention.

M. Louis Dop called the attention of the Permanent Committee to another point marking the difference between the two projects. He thought that everything concerning statistics should be centralized in a single bureau, as well as all information regarding agricultural products and rural labour. In fact, following Article 9 of the Convention, the task of the Institute, as far as concerns labour, should be limited to the statistics of agricultural wages, whereas in the Italian project the data relative to emigration, permanent and periodical, are discussed.

The President explained the principles followed by the Royal Commission, which had to recognize that it would have been very difficult and almost impossible to determine exactly the wages of rural labour, because of the numerous and different elements employed to establish the measure and the real value of these wages which are often paid in kind and which vary in each country and in each season, both in regard to different agricultural operations and to what the English call the 'standard of life.' So much the better for the work of the Institute if the Permanent Committee can find the means of collecting and presenting exact and precise data. The Royal Commission had recourse to data relative to emigration in order to determine to what extent it was affected by the law of supply and demand.

M. Louis Dop, delegate from France, stated that very precise data as to the rates of agricultural wages are furnished to the Department of Agriculture of the Republic. On the other hand, one can only give what one has. He insisted upon the convenience of concentrating in the Bureau of Statistics data relative to manual labour.

As far as concerns the organization of the services, differing from his colleagues of Germany and Austria, he was of opinion that it would be necessary to establish a special bureau for diseases of plants.

Many questions of a statistical kind, but above all of a technical and scientific nature, applied to the argument that it is not convenient to group data relative to the diseases of plants in the Bureau of General Statistics.

M. Konow, delegate from Denmark, stated that his government had instituted a special bureau charged with furnishing information to the International Institute of Agriculture and with the distribution of informaton, which, in its turn, the Institute would undertake to furnish. He thought that other countries should form similar bureaux, to serve the Institute, which, only by such means would be able to fulfil its functions in a complete and effective manner.

His Excellency Boghos Pascha Nubar, delegate from Egypt, stated that in the preceding sitting the committee had decided to only open a general discussion upon the project of the rules and organization of the Institute. They should, therefore, confine themselves to declarations of a general order, and if no one had anything more to say, it only remained to nominate the commission mentioned in the proposition of the delegate from the Netherlands.

The President read again the text of this proposition and asked the committee if it wished to elect by acclamation the list of members of the proposed Commission, handed to him by Mr. Lovinck.

Mr. Louis Dop proposed to add to the list the names of the delegates from Spain and Denmark.

The list being put to the vote was approved by acclamation.

It is as follows:—

(1) His Excellency Boghos Pascha Nubar, delegate from Egypt.
(2) Sir Edward Buck, K.C.S.I., delegate from India.
(3) M. O. Bolle, delegate from Belgium.
(4) M. Louis Dop, delegate from France.
(5) Sir Thomas Elliott, delegate from Great Britain and Ireland.
(6) Count E. Faina, delegate from Italy.
(7) M. Fleva Nicolas, delegate from Roumania.
(8) M. H. J. Lovinck, delegate from the Netherlands.
(9) M. E. Miklos de Miklosvar, delegate from Hungary.
(10) M. le Mueller, delegate from Germany.
(11) M. Chevalier de Pozzi, delegate from Austria.
(12) M. J. Gunion Rutherford, delegate from Canada.
(13) M. Echevarria Auguste, delegate from Spain.
(14) M. H. H. Konow, delegate from Denmark.

May 28, 1908.

The President proposed to the Permanent Committee to add three members to the Commission named on the 26th, to wit, His Excellency M. Saenz Pena, delegate from the Argentine; M. le Professeur Vieira Souto, delegate from Brazil and M. G. S. Estava, delegate from Mexico.

The President's proposition was approved.

The President further announced that the Commission above mentioned had nominated a sub-commission consisting of the delegates from France, Germany and Great Britain and Ireland, charged with preparing a general plan of the rules of order of the Permanent Committee. This general plan having been edited, and the Commission having decided to submit it immediately to the Permanent Committee,

the President stated that it would be distributed as soon as possible to the members of the Committee at their respective residences in order to allow their examining it and discussing it the next afternoon.

May 29, 1908.

The President opened the general discussion on the plan of the rules of order for the Permanent Committee as edited by the sub-commission.

His Excellency M. Boghos Pascha Nubar, delegate from Egypt, then read the following declaration:—

'Gentlemen,—The project submitted to us by the sub-commission far exceeds in importance the work which it was asked to perform. It was charged by the Commission with the elaboration of the simple interior rules of order for the Permanent Committee, but our colleagues, without being checked by the surfeit of work imposed upon them, have enlarged the scheme and have at the same time drawn up a project for the organization of the different bureaux and services of the Institute.

In drawing attention to this fact my intention is not at all to criticise, but rather to bestow a well merited eulogy and above all to thank our colleagues of the sub-commission for the immense mass of work which they have performed in so short a time with an activity and devotion which I am sure we ought to recognize.

Each of us has certainly reflected on the questions which present themselves regarding the organization of our Institute and has sought, as I have sought, to find a solution as simple and as free from complication as possible, with a view of making easy in practice the application of rules of procedure in accordance with our Convention of 1905.

For my part, I have reached a conclusion that it would be difficult to separate in this work the interior procedure of the Permanent Committee from the general question of the organization of the Institute. I think that the questions overlap to such a degree that the best solution, the one which would eliminate every complication and every practical difficulty, would be to combine them and have only one general constitutional organization. My intention was to propose this to the Committee. I may, therefore, tell you how pleased I am that the sub-commission has arrived at the same conclusion and that better still, it has prepared the complete project which is submitted for your deliberations. I shall permit myself, during the discussion of the articles, to make some observations and perhaps to ask some modifications, but before passing to that discussion, I wish to thank my colleagues of the sub-commission for the spirit which has reigned in the editing of this project and in a very special manner on account of the articles governing vote by state in the commissions. In proposing that this vote be made by state and giving a single vote to each delegate and not the number of votes fixed by the group to which he belongs, our colleagues of the sub-commission, who all three belong to the first group, and have in consequence the right to five votes each in the Permanent Committee, have given the best evidence of the sentiments of equity and liberality which animates them towards the delegates from states belonging to less important groups. This breadth of view, which, I have no doubt is shared by our other colleagues, is to us, a sure guarantee of the spirit and the sentiments which will govern our labours and therefore of the success of our Institute."

M. Miklos de Miklosvar, delegate from Hungary approved the sentiments expressed by his colleague, the delegate from Egypt, regarding the excellent work accomplished by the sub-commission, but thought it his duty to make certain suggestions as to the organization of the Institute, differing in some degree from the principles laid down by the sub-commission and proceeded to read these in detail.

From this time on the Permanent Committee devoted itself entirely to the discussion of the rules of order and the organization which had been prepared by the sub-commission of three.

These comprised (1) the official language; (2) the powers and duties of the President, Vice-President and Secretary General; (3) the convening and procedure of the Permanent Committee;

(4) The organization of the Institute itself, the Committee recommending three divisions:—

(*a*) That of the General Secretary;

(*b*) That of statistics and general agricultural information, including plant diseases;

(*c*) Social and economic institutions, including agricultural co-operation and credit;

(5) The appointment of a sub-commission for the control of each of these three divisions;

(6) The engagement, qualifications, payment, and general control of the staff.

All these subjects were discussed in the greatest possible detail. The position, duties and status of the officers to be engaged, the terms of engagement, salaries, pensions, vacations and matters of a like nature, especially evoked many eloquent orations.

These discussions as a whole, occupied five lengthy sessions, at the end of which but little progress had been made in the task of deciding upon or defining the actual work which the Institute was supposed to perform.

On the afternoon of June 6, being of opinion that there had been more or less waste of time, and that the energy and effort which had been expended in discussing these apparently minor details, might better have been devoted to the consideration of the actual work of the Institute, in a larger sense, I felt it my duty to address the committee as follows:—

'Mr. President, as the representative of Canada, I desire, before the close of this gathering, to have the opportunity of making a few brief remarks with reference to certain phases of the work connected with the establishment of the International Institute of Agriculture, some of which have been dealt with, while others have been ignored, in the discussions of the committee in which hitherto I have taken little part.

In the first place, I desire to express, on behalf of the Government and the people of Canada, our appreciation of the noble and magnificent generosity shown by the King of Italy and his Government, in the manner in which the International Institute of Agriculture has been initiated and endowed.

The original conception of Mr. Lubin, noble as it was, would in all probability have remained, at least for many years, only a beautiful dream, but for the appreciation and support bestowed upon it by our friends of Italy, promptly seconded as they were by the other nations, who showed themselves quick to realize the gigantic possibilities of the idea.

As a rule, great bodies move slowly, and while true of corporations and even of nations, this old adage has scarcely been verified in the present instance, involving as it does the united action of practically the whole civilized world. It is but a little more than three short years since the proposal was first made public, and we now find ourselves gathered from all quarters of the globe, established in a comfortable, handsome and permanent home, well advanced in the work of organizing what to the minds of thinking men is undoubtedly the greatest and most benevolent international scheme which has ever been conceived and the wide possibilities of which it is utterly impossible to overestimate. When one considers the many difficulties attendant upon the assimilation of the many widely different ideas which converge in an assembly of this kind, the progress which has been made is undoubtedly most gratifying, and reflects the greatest possible credit upon the working members of this committee, especially upon those of the sub-committee which worked almost day and night, labouring earnestly to prepare the exhaustive 'reglement' which has been the subject of discussion during the week just passed.

While in view of this earnest and conscientious work and its undoubtedly great results, it may appear somewhat ungrateful to venture into the field of criticism, I may be pardoned, as the delegate of a young, though vigorous and rapidly growing agricultural nation, in which the instincts of business are perhaps more fully developed than those of sentiment, if I venture to suggest that the work achieved at this meeting, although unquestionably of great value, has been conducted on somewhat different lines from those which it might reasonably have been expected to follow.

Having travelled a much greater distance than any other delegate here present for the special purpose of securing for the Government of Canada definite and reliable information as to the exact nature and scope of the work for which this Institute has been created and which it is expected to perform, I am naturally somewhat disappointed at being compelled to return to my country possessed of but very little more practical information than I had before leaving home.

We have, as I have already stated, magnificent quarters and we have now as a result of our labours during the past fortnight a scheme fairly complete for the conduct of the office work of the Institute, but as to what that work is really to be, and as to how each of the adhering governments has to arrange for the performance of its share of that work, we have even now no practical or definite knowledge.

Speaking as a business man, and as one who has had a considerable experience in public affairs and in the organization of official work, I cannot refrain from expressing the opinion that it would have been better to devote more time to the consideration of the actual work of the Institute than to the many little details of its 'fonctionnement' and the classification and management of its officials, matters, which from my point of view, might with reasonable safety have been left largely in the hands of the Secretary General, and the other principal officers of the staff, who, if the Institute is to succeed at all, must be men of business capability, progressive ideas and above all sound common sense.

It may be said that this suggestion might have been made at an earlier stage of the proceedings, when action upon it might possibly have been taken. To this criticism I can only reply that, looking as I did upon the discussion and adoption of the 'reglement' as very largely a matter of form which would be generally accepted without much discussion, I was under the impression that ample time would be afforded for the consideration of the real work of the Institute, in accordance with the suggestion made by the honourable the delegate from the Netherlands, at our first meeting.

I feel the more keenly in regard to this matter because my chief, the Honourable Sydney Fisher, Minister of Agriculture for Canada, keeping in view the possibilities of this Institute, in the organization and development of which he has from its inception taken a keen interest, is contemplating a complete revision of the work of securing agricultural statistics in Canada. The organization of this service, which, while under existing conditions, entirely satisfactory from a national point of view, might perhaps be improved for international purposes, has been held in abeyance in the hope of this meeting deciding upon a definite plan, involving such a simplification and assimilation of the agricultural statistics of each adhering country, as would secure at least reasonable uniformity in the manner and method of their periodical presentation to this Institute.

Another point on which I think it is essential that a clear understanding should be reached, is as to the exact relations between the members of the Permanent Committee as individuals, on the one hand, and the Institute and its officers on the other.

While the Permanent Committee, acting as a body, must necessarily have full and complete control over the Institute, its conduct and its affairs, it should, I think, be laid down as a sound business principle that an individual member, as such, shall not interfere in any way with the work of the Institute or its employees. The proper accomplishment of the work for which the Institute has been created depends entirely on the existence of an absolute security that the information of which it is to become

possessed will reach the public only at such times and through such channels as may be decided upon by the Institute itself. This being the case it is of the utmost importance that any outside interference with its officials should be absolutely impossible, and that the discipline maintained among the staff should be of the most rigid character.

I do not know, Mr. President, whether or not I shall again attend a meeting of the Permanent Committee; I trust that at the November meeting, it will be possible for my minister himself to take part in your deliberations. Meantime, I desire to thank you, on behalf of myself and my colleagues, for the uniform kindness and courtesy with which we have been treated during our stay in Rome.

I would add that we who live across the Atlantic will continue to watch with interest and appreciation the progress of the great work, to which the King and Government of Italy have given such a noble impetus.

Baron Bildt, delegate from Sweden, seconded by M. Louis Dop, delegate from France, moved the following resolution:—

'With the view of assuring, from the foundation of the Institute, the progress of the different technical services, the Committee decides to entrust to the editing committee the task of establishing a definite and precise programme of the different statistical informations which will be asked from the various states and of presenting this programme, with the shortest possible delay to the Executive, who will be charged with forwarding it immediately to the delegates of the different states.'

His Excellency Boghos Pacha Nubar, delegate from Egypt, was of opinion that the task entailed in this proposition might with advantage be entrusted to the Commission charged with the definite editing of the articles and of the project relative to the pensioning and insurance of officials, and suggested the following modification:—

'With the view of securing a definite edition of the rules of order of the Institute, as also the two projects relative to the pensioning and insurance of officials and the Budget, the Permanent Committee names a special commission of eight members, whose powers will commence from the actual adjournment of the Permanent Committee and will expire at the date of its first meeting in the month of November next.'

This modification having been accepted by Baron Bildt and M. Louis Dop, was put to the vote and approved.

The following gentlemen were elected by ballot as members of the commission:—

The delegates from Germany, Argentina, Austria, Belgium, United States, France, India and Italy.

After the discussion of some minor matters, it was decided on the suggestion of the President, that the General Assembly should be convoked between the 20th and 30th of November next, and that the meeting of the Permanent Committee should precede such convocation by ten days.

M. C. e Vasconcellos, delegate from Portugal and Dean of the diplomats present, asked leave to give expression to his sincere sympathy and regard for the President, who had directed the sittings of the Committee so wisely and equitably, for his colleagues for the spirit of conciliation which they had shown in the course of the debates, and lastly for the Secretary General and his co-workers who have contributed in so distinguished a manner to the rapid progress of the work. He had no doubt that these sentiments would be shared by all the members of the Permanent Committee.

The President then spoke as follows:—

'Gentlemen and dear colleagues. I thank you all from my heart for the good will which you have been so willing to show to me and I particularly wish to thank His Excellency the delegate from Portugal for the very kind words which he has uttered regarding me. If, at times, I have not been able to perform with satisfac-

tion the duties which you have done me the honour of entrusting to me, I beg that you will not attribute it to lack of good will.

'I am greatly pleased that the International Institute of Agriculture has given me the opportunity of renewing old acquaintances and of acquiring new, as also of appreciating the eminent qualities of which the gentlemen representing the various adhering states have given proof.

'In the name of my government and of the public opinion of my country, I pray you gentlemen to convey to the various countries which you represent our sincere regard.

'Thanks to your governments, it has been possible to give to the generous idea initiated by His Majesty the King, my august sovereign, a concrete form, and to place it upon a practical basis. Thanks to you, this great work of peace and solidarity has overcome its first difficulties which are always the greatest. It is now in progress and nothing will stop it, if you are willing, as I am sure you are, to aid it as you have aided it in the initial steps, with your experience and marked ability.

'This being the case, I do not say "Adieu" gentlemen and dear colleagues, but "Au revoir" and that soon.'

The Permanent Committee then adjourned.

The Commission of eight which was composed of Senator Count Faina, delegate for Italy; Dr. Muller, delegate for Germany; M. Louis Dop, delegate for France; Sir Ed. Buck, delegate for India; Mr. David Lubin, delegate for the United States; M. O. Bolle, delegate for Belgium; M. Chevalier de Pozzi, delegate for Austria; M. R. Saenz Pena, delegate for the Argentine Republic; met for the first time on June 11, the only member absent being Sir Edward Buck, who had found it necessary to leave Rome.

At this meeting the principal subject discussed was that of the best mode of soliciting from the governments of the various adhering states statistical information desired for the use of the Institute.

Propositions embodying definite interrogatory schedules were presented by Dr. Mueller and M. Bolle, but after some discussion both were rejected on the representations of Count Faina to the effect that the Italian Government had already sent out to the adhering governments, a series of questions, the answers to which in detail would serve the required object.

It was then decided to entrust to M. Louis Dop and M. Bolle the final editing and harmonizing of the articles of procedure approved by the Permanent Committee; to Dr. Mueller the working out of a system of pensions for officers; to Count Faina the study of systems of insurance, while to Count Faina and Dr. Mueller were also entrusted the preparation of the Budget; reports on all these subjects to be submitted to the Commission in the month of October.

The sub-commission next met on November 4, all the members being present with the exception of the delegate from the Argentine.

At the sessions, which lasted until November 9, there were also present from time to time, M. H. H. Konow, delegate from Denmark, Sir Thomas Elliott, delegate from Great Britain and Ireland, Dr. A. Fjelstad, delegate from Norway, and myself as delegate from Canada.

The work of the Commission at this time consisted entirely of a careful review of the rules of order and of the general plan of the work of the Institute, the latter comprising the various Permanent Commissions to be entrusted with the different branches of the work, the allotment of the staff and the Budget.

As all these matters were again fully discussed in the Permanent Committee and embodied in the report made by that body to the General Assembly, of which you yourself were a member it is scarcely necessary to further allude to them at present.

The Permanent Committee was formally convened on November 16, delegates of thirty-one countries being present.

The President announced the addition to the membership of the Institute of the Republic of San Marino and the Italian colonies of Erythrea and Italian Somaliland.

It was agreed that as a special privilege the delegates from the United States, China and Japan should be assisted by their private secretaries.

The orders of the day having now been reached, the President announced that the first duty of the Commission was the nomination of the Vice-President. On motion of M. Estava, delegate from Mexico, seconded by M. Miklos de Miklosvar, delegate from Hungary, action on this head was postponed until after the session of the General Assembly, when the regulations of the Permanent Committee should be approved.

M. Louis Dop then read on behalf of M. Lubin, delegate from the United States, a communication giving the views of the country on the organization of the Institute.

The consideration of the rules of order, as edited by the Commission of eight, was then begun by another lengthy discussion on the question of the official language to be used in the debates of the Permanent Committee, Mr. Taverner, delegate from Australia, being the principal opponent of the adoption of the French language. The clause containing this provision was, however, formally passed with a slight verbal amendment which appeared to satisfy Mr. Taverner.

The committee then devoted itself to a rapid but careful consideration of the rules of order of the Permanent Committee and the organization of the Institute, its various permanent sub-commissions and its staff.

These matters having been disposed of, subject to the approval of the General Assembly, the question of the Budget came up for discussion on November 18.

On this subject Dr. Meuller, to whom in conjunction with the President, the task of preparing the Budget had been entrusted, contributed a most comprehensive and exhaustive statement. In this statement he entered fully into a consideration of the Institute from various points of view. In fact so interesting and illuminating was his address that I have deemed it advisable to translate and present it here.

The allusions which he from time to time makes to the budget, while perhaps by themselves somewhat obscure, will be easily understood on referring to that document itself, which will, I presume, be embodied together with the rules of order and plan of organization in your own report of the proceedings of the General Assembly.

He spoke as follows:—

'Gentlemen,—The Commission of eight which you have charged with the preparation of the different propositions to be submitted for your consideration, has followed the method of modern economy in the division of work.

To our President and to myself the Commission has entrusted the financial part of our programme.

It is the same method of division of work which now leads me to explain to you, as reporter, this part of the programme, and to present to you the ideas and motives which have guided us. It is my duty to premise that while I have been charged with reporting this part of the programme, I have not performed the greatest part of the work. It is to our venerable President, Count Faina, that we owe the propositions which I shall lay before you; they are his ideas and his propositions, the result of his unceasing labour during the past summer, which have furnished the basis of the deliberations and decisions of the Commission in all that concerns this part of the programme. It is because of his position as President that he abstains from addressing you personally upon these propositions, which are chiefly the result of his own work.

I have told you, gentlemen, that I will report upon the financial part, that is to say, upon those articles of our procedure, which, in their definite consequences, find expression in the figures of our budget, or rather which furnish the most essential elements of our budget.

These articles refer to (1) The organic plan affecting the principle of the remuneration of our officers and the establishment of regulations governing their situation during the period of their service; (2) The system of retiring allowances, that is to say, the establishment of the guarantees which we will be disposed to accord to our officers in case of sickness, old age, death or dismissal.

Always gentlemen, in discussing these articles, we should not consider exclusively the consequences of a financial nature which they will have upon our budget, but also and perhaps in the first place, their effect upon the future of our Institute, that is to say upon the quality of our productive work, and the services which, on the foundation of our Institute, have been promised, not only to the agrarian world. but to the world as a whole.

You will find on page two of the minutes under the title 'Organic plan,' line one, the following phrase:—'The Commission adopts the following proposition; the Commission, after exchanging different points of view concerning the remuneration of officers, and of the inferior employees of the Institute, is in favour of drawing up a normal table of salaries for the different employees. This table will form the financial statute of the persons employed in the different services of the Institute and will establish upon a fixed and regular basis the pecuniary situation of the staff.'

As the different points of view have not been mentioned, I beg to draw your attention to several general observations. The organization to be established for our Institute is based—

(1) On its financial capacity;

(2) On its juridical nature;

(3) On the definition of its material character;

I say nothing of the good-will of the adhering governments, who ought to furnish us the material essential for our work, as to this I have no doubt.

I dwell a moment on our financial capacity; as you know gentlemen, this is actually very limited, but fortunately, there already exists to a certain degree, the possibility of its further development. After the two first years of existence the unit of subscription can be raised to a maximum of 2,500 francs.

We were obliged to keep in view, in formulating our propositions, these two circumstances, and naturally we kept within the limits as actually drawn, but we have always borne in mind the fact that at a given moment there would be a possibility of improving the financial conditions of the Institute.

Now as to the juridical nature of our Institute, there are two points to consider:—

(*a*) The circumstance that our Institute does not possess in itself the absolute guarantee of unlimited duration although we all have full and entire confidence in its permanency. It follows that we cannot to-day assume any liability which will imply a supposition of the permanent existence of the Institute. On the contrary we must admit the hypothesis that at any time the Institute may cease to exist, and that, in that event, we should find ourselves entirely free from any kind of liability. In practice this is important, as in choosing a system of remuneration and in fixing the nature of the engagement of our officers, we ought to reserve the power of dismissing them at any time, and pay them accordingly.

(*b*) The other point has reference to the international nature of the Institute which demands a composition of the staff equally international, as is provided by article 26 of our procedure. We must then reckon with the fact that we will have to engage officers coming from different countries and give them a comfortable existence in a foreign country, and although in this case it is the beautiful country of Italy, in which we admire so many sublime things, it is none the less for them a foreign residence, subject to some privations as well as exceptional expenses. Our officers then should find certain compensation in their remuneration.

(*c*) I have mentioned a third cardinal point to wit, the definition of the char-

acter of our Institute; if you were to ask me for a positive definition of our Institute, I would find it difficult to answer you.

Permit me then to tell you now that which is not in the nature of the Institute.

Has the Institute a diplomatic character? No, gentlemen; although we have the honour and the pleasure of counting among ourselves a great number of eminent diplomats and although in the General Assembly there will be perhaps diplomatic representatives of the governments who will lead their delegations, the true character of our Institute will not change. Certainly, gentlemen, the Institute in view of its international composition, will always be in touch with diplomacy, and I would even say that the Institute by its preparatory work, will render services to diplomacy, in dealing with international matters, but the Institute can never assume a diplomatic character, without risking the failure of realizing the objects which it has in view.

Has our Institute the character of an administrative governmental institution? No, gentlemen; neither would that suit the nature of our task. Certainly we should enter and remain intimately in touch with all governmental administrations. They will be, if I may use the expression, our nurses, from whom we will draw our financial means, as well as the material which we require for our work. Meanwhile our organization and our method of work differ entirely from governmental administrative systems. A bureaucratic routine would mean the death of our Institute.

Has our Institute a purely scientific character? No, gentlemen; it is not ours to seek the solution of scientific problems, but we will be able to serve science and to assist it by bringing to it very useful scientific material. We will be closely allied to science; I would even say our methods of work will resemble scientific methods more than any other, but our Institute will not, for all that, be a scientific Institute.

Has our Institute the character of a statistical bureau? Does it resemble a government statistical office? No, gentlemen; it will certainly have much affinity with such an office, but its character will be very different. Certainly, gentlemen, the statistical offices will be our principal co-workers, as on the other hand, our Institute by elaboration of material collected in all parts of the world will be able to materially aid statistical bureaux. But there will nevertheless exist a great difference. This difference arises, from the fact that our Institute is not called upon to deal with dead but with living statistics. I do not say that the existing statistical bureaux do not also deal with living statistics; they do, and it is precisely that part of their work by which our Institute will profit. But these living statistics are not the principal object of these bureaux. Their principal object consists, if I may say so, in the gathering and elaboration of data from a historical and retrospective point of view, which are doubtless of use in their application to existing conditions, but which are no longer existing at the time of their application. Our Institute, on the contrary, should work in such a manner as to furnish data from day to day, and consequently answer to existing and daily demands.

There, gentlemen, is a list of negations; one might reasonably ask, what then is the positive character of the Institute? In answering this question I would use a metaphor. I believe we might compare our Institute to an industry which sets out to create a principal product, but which in the course of manufacture, creates at the same time a number of secondary products. In the Institute the first matter would be the assembling of information coming to us from governments and from other sources throughout the entire world. The principal product which we desire to create is a certain and wide basis for the formation of real prices of agricultural products. The secondary products are more varied: they consist of the services which we can render to agricultural and commercial statistics in general, to science, to government administration and to diplomacy.

The Institute will then have the character of an industrial scientific establishment of such a sort that its organization, its methods of work, its staff and the qualifications of its employees will correspond with its special character.

I have had to extend my remarks somewhat to arrive at a very simple conclusion, namely, that we should have a staff having qualifications entirely special, of extensive culture and worthy of the greatest confidence. Needless to say, I speak specially of the directing officers, from whom we will require exceptional qualifications, but, inasmuch as on the one hand we are obliged to engage such officers, we wish on the other hand, as I have already had occasion to explain, to reserve to ourselves every possible liberty of action.

It must be added that this reservation is the much more necessary because of the novelty of the enterprise and our lack of experience which must eventually confine us to the nomination of persons whom we will be able to dismiss at any time.

It follows that it will be only at a very high rate of remuneration that we will be able to find superior officers entirely suited to our needs.

These are, gentlemen, the points of view which have guided us in establishing the normal table of appointments for all the officers, particularly for those who will hold controlling positions and those to whom the international principle is particularly applicable.

For those employees to whom these considerations do not apply, we have been able to conform approximately to the scale of payment in force in Italy, bearing in mind at the same time, that we must also demand from this portion of the staff an effective service while reserving, even towards them, every liberty of action. This is why this class of employees is equally well remunerated.'

The remainder of Dr. Mueller's address which dealt in detail with the proposed salaries, has since lost some of its value because of changes in the figures made by the Permanent Committee after the meeting of the General Assembly.

All the discussion at this and the following meeting of the Permanent Committee was confined almost entirely to matters of detail.

The special reports presented by M. Louis Dop and Dr. Mueller to the General Assembly of which you were at the time the presiding officer, contain in all necessary amplitude the results of the labours of the Permanent Committee.

These labours, so far as I was concerned, came to a close on the evening of November 18, when the two gentlemen above named were appointed as official reporters to the General Assembly.

Hon. Arthur Boyer, who, at this time, succeeded me as Canadian delegate to the Permanent Committee has doubtless informed you fully regarding the work subsequently performed by that body.

I cannot close this report without again expressing my deep sense of obligation to Sir Thomas Elliott, the official delegate of Great Britain and Ireland. To his untiring efforts, marked at all times as they were, by consideration for others, suavity and sound common sense, the Institute, in my opinion, owes almost entirely the comparative success which it has so far achieved.

I am satisfied that without his influence the task of harmonizing the views of the delegates representing the greater European powers would have been almost, if not altogether, impossible.

He was well sustained by another very able and experienced man, Sir Edward Buck, an old Indian administrator, who was for many years Secretary to the Council of India, and who has given practically his whole life to the task of organizing the agriculture of that country.

Much credit is also due to Mr. T. P. Gill, Secretary of the Department of Agriculture and Technical Instruction in Ireland, who took a deep interest in the work of the Institute and contributed largely to the measure of success achieved.

Among the delegates from other countries were many able and even brilliant men, among whom may be especially mentioned Dr. Mueller, M. Louis Dop, M. Miklos de Miklosvar, and His Excellency Boghos Pascha Nubar, the representatives respectively of Germany, France, Hungary and Egypt.

As the first official delegate from Canada to the International Institute of Agriculture, I desire to place on record my opinion that if the destinies of that Institute are controlled, as they ought to be, by the business nations, it is certain to have a marked influence upon the future peace and prosperity of the world.

It therefore goes without saying that the commercial nations of the world, especially those which, like Canada, are large producers of agricultural staples, should take seriously to heart their share in its development, and should employ in connection with it, the best and brainiest men available for the work.

I have the honour to be,
Sir,
Your obedient servant

J. G. RUTHERFORD,
Veterinary Director General and
Live Stock Commissioner.

To the Honourable,
The Minister of Agriculture,
Ottawa, Ont.

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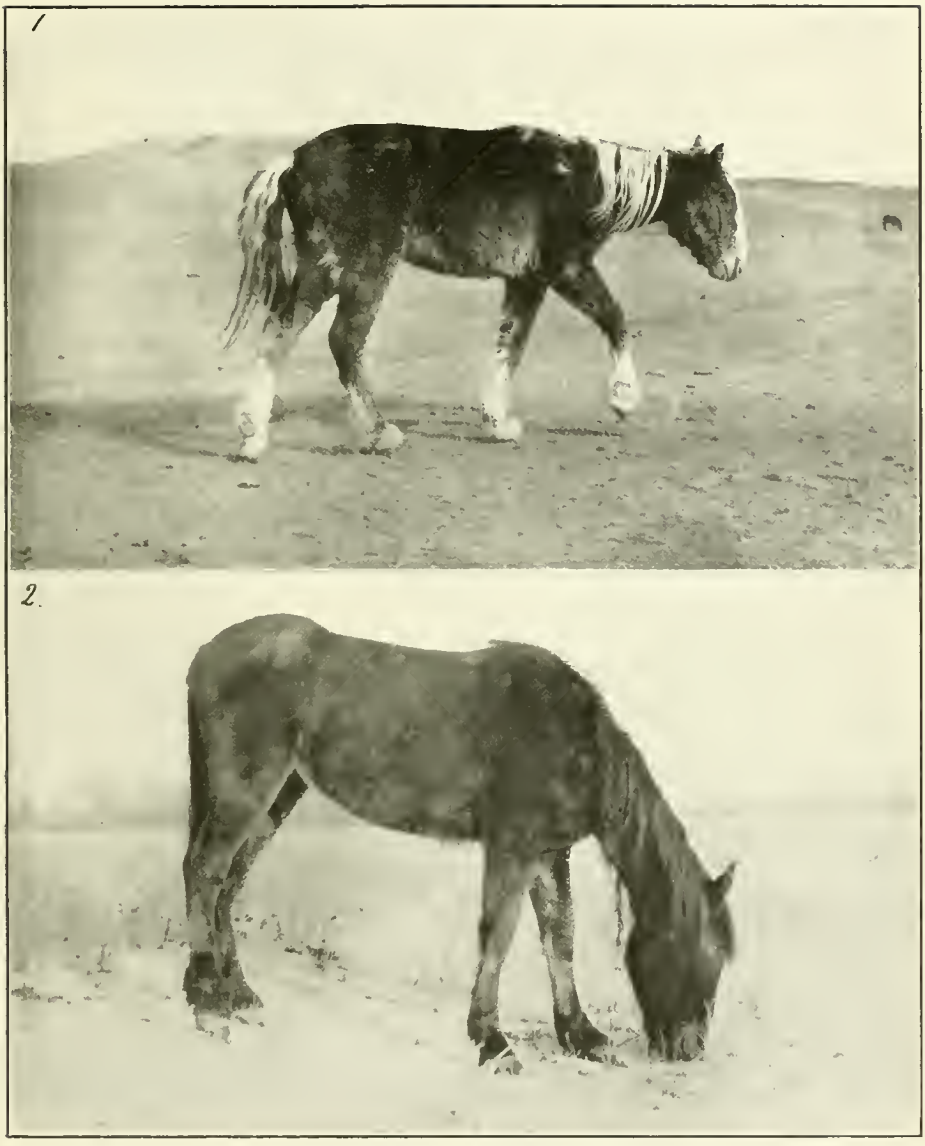

Loco Disease. (Appendix No. 10.)

Loco Disease. (Appendix No. 10.)

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Loco Disease. (Appendix No. 10.)

Loco Disease. (Appendix No. 10.)

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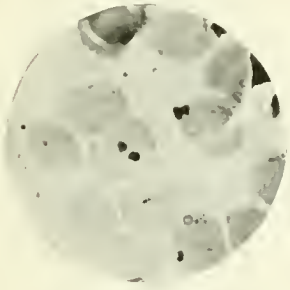

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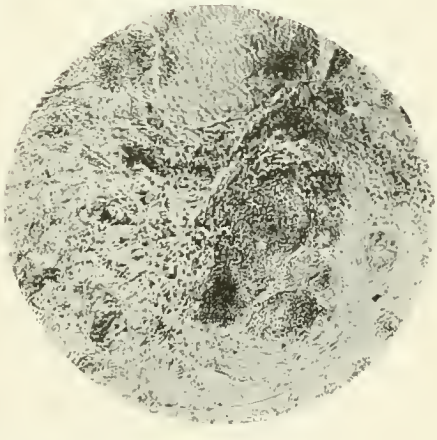

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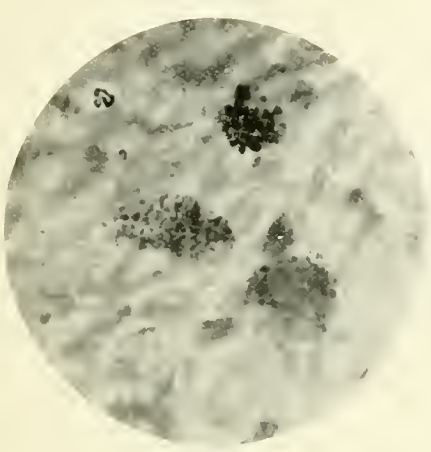

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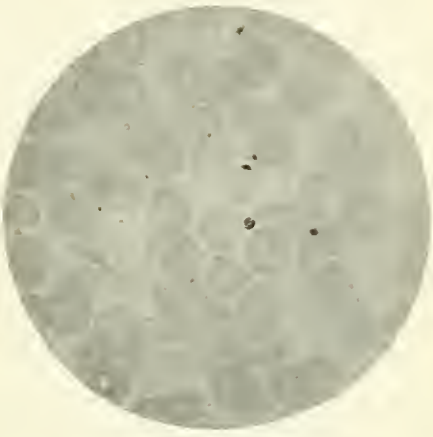

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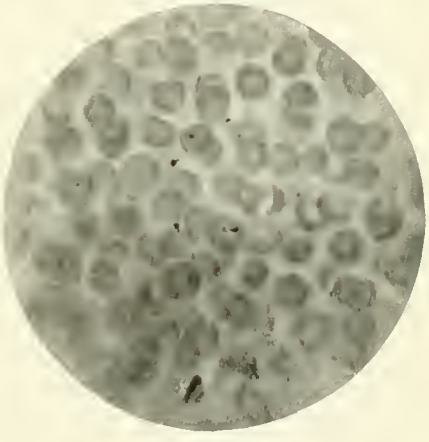

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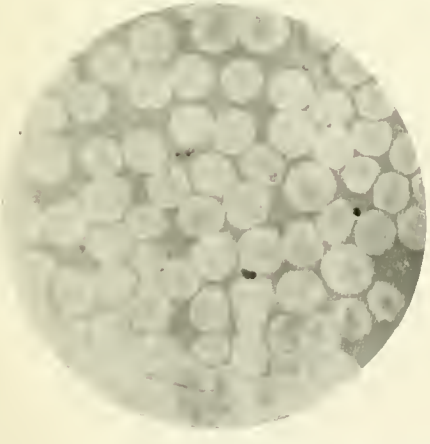

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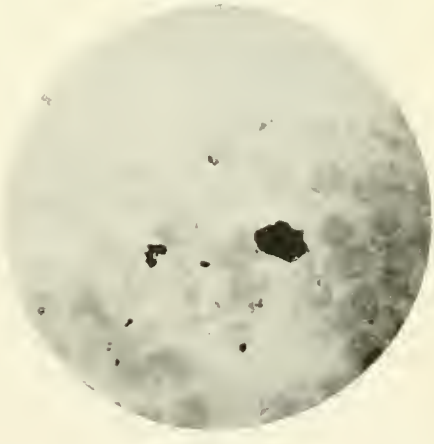

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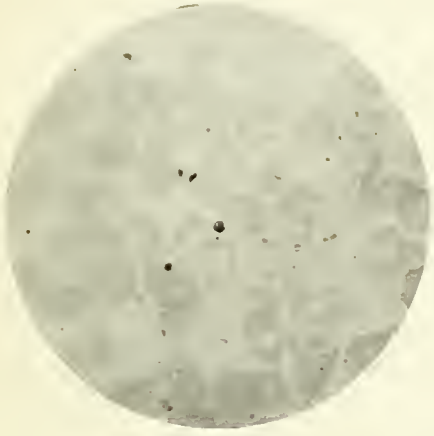

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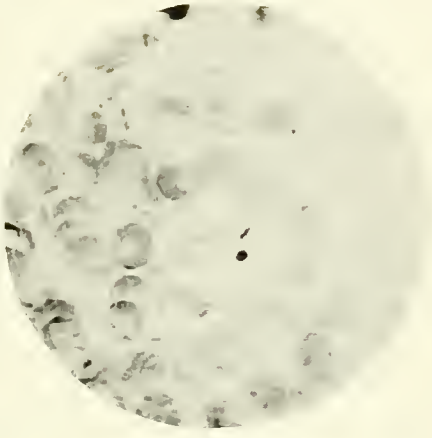

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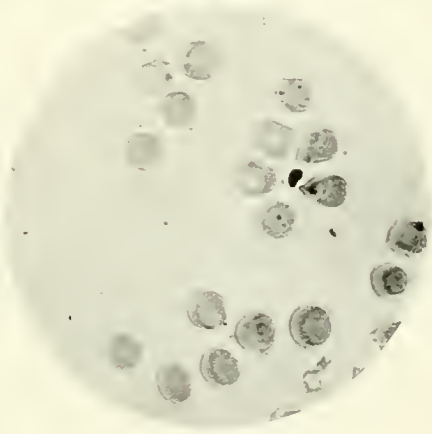

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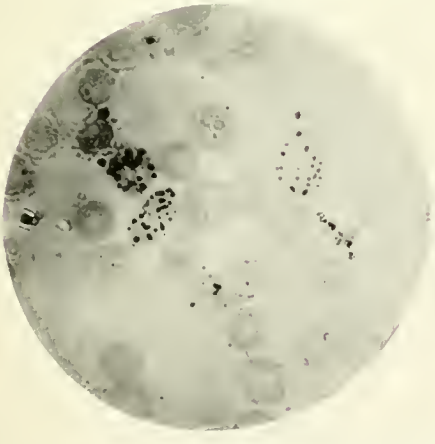

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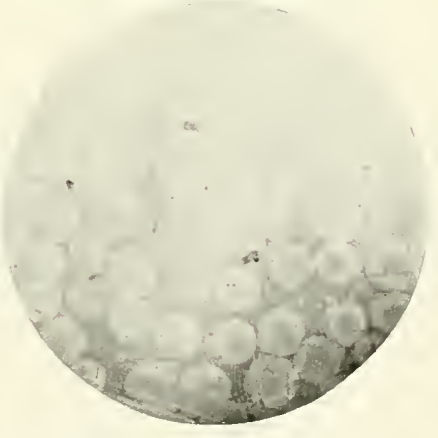

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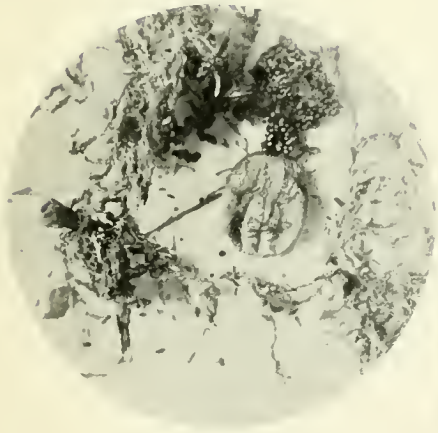

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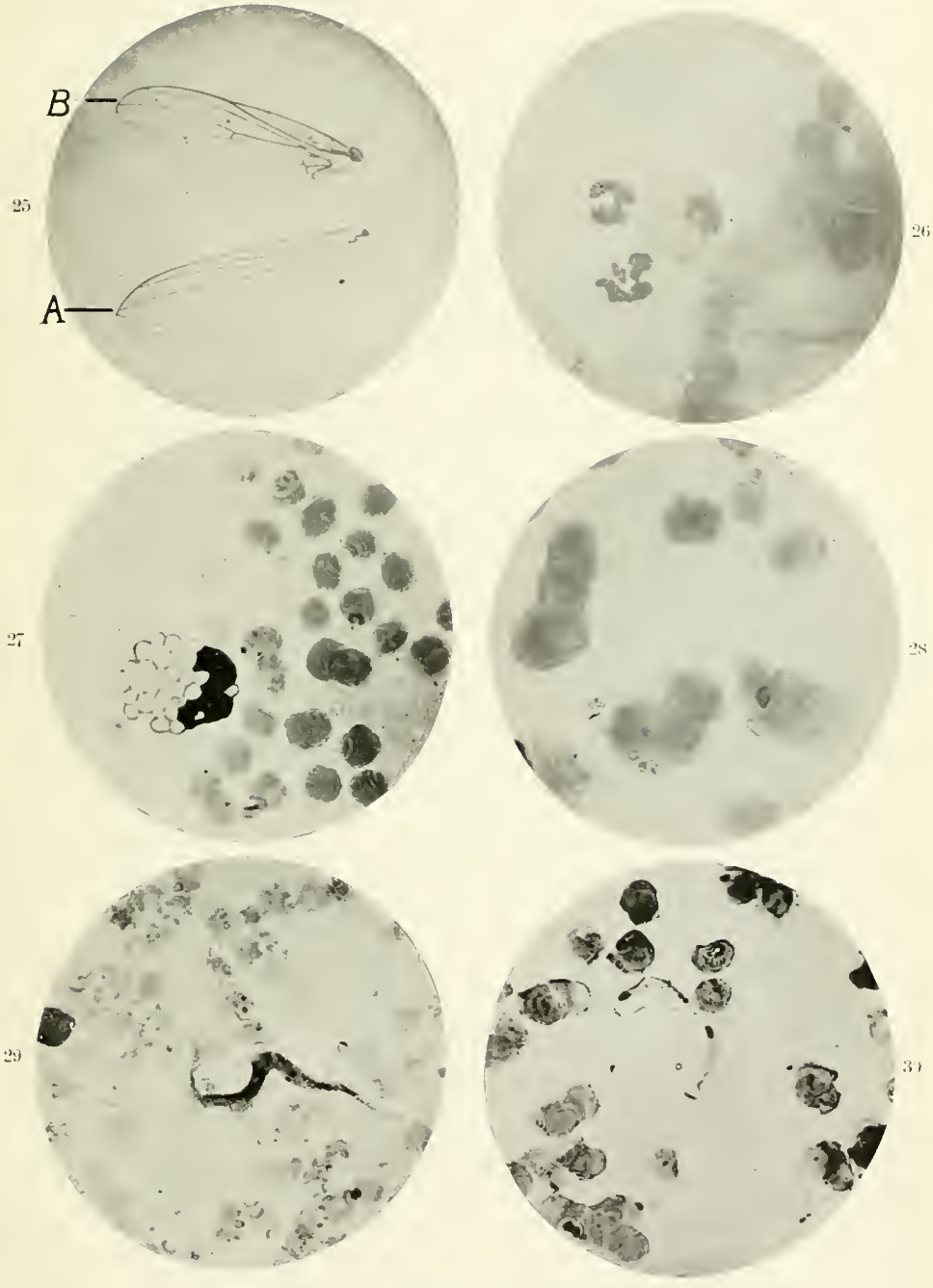

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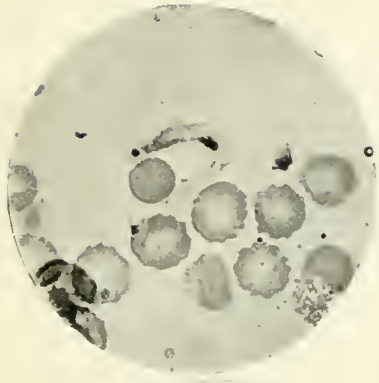

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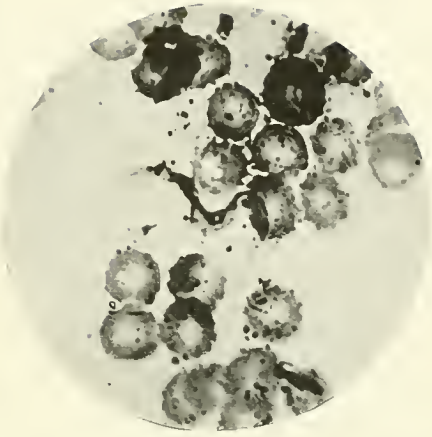

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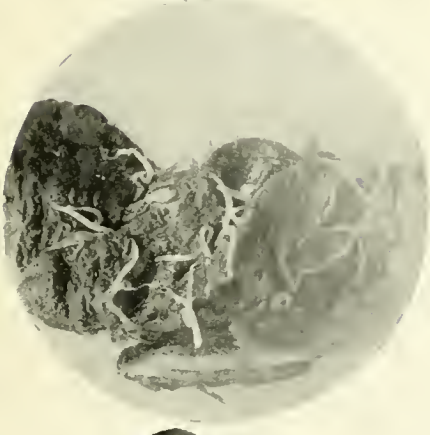

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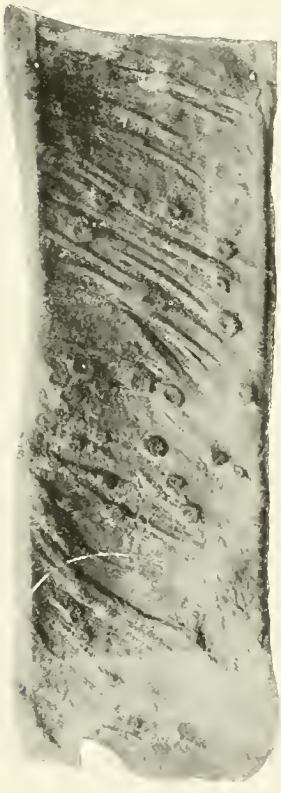

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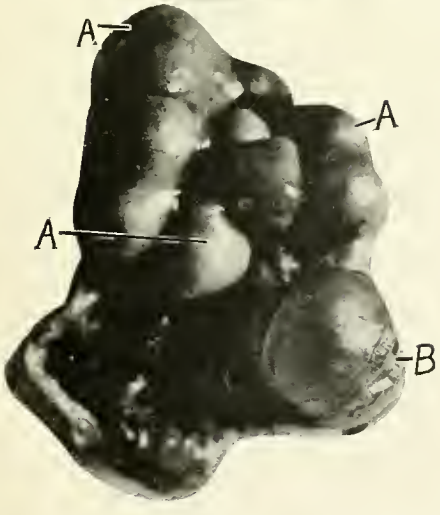

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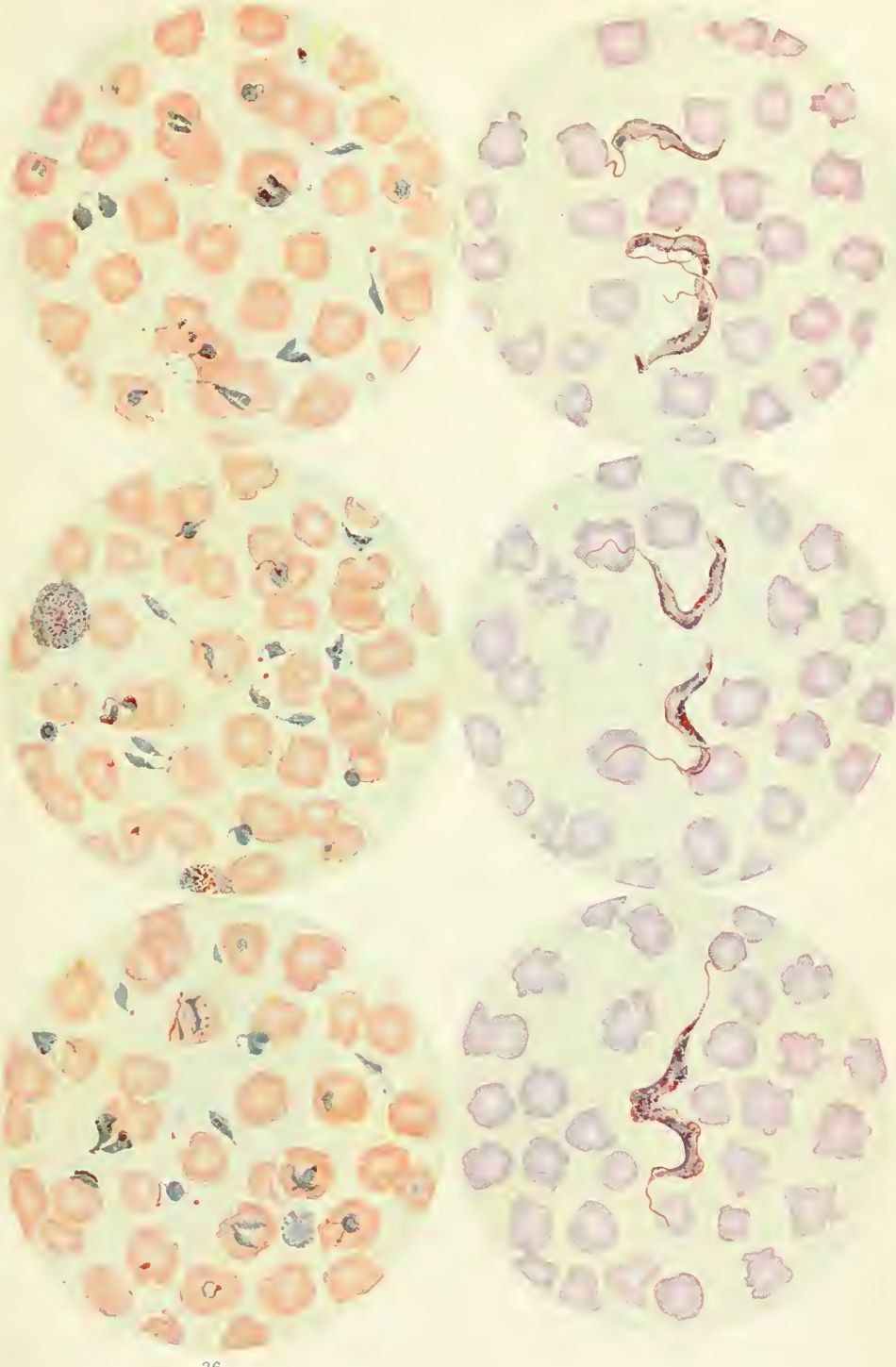

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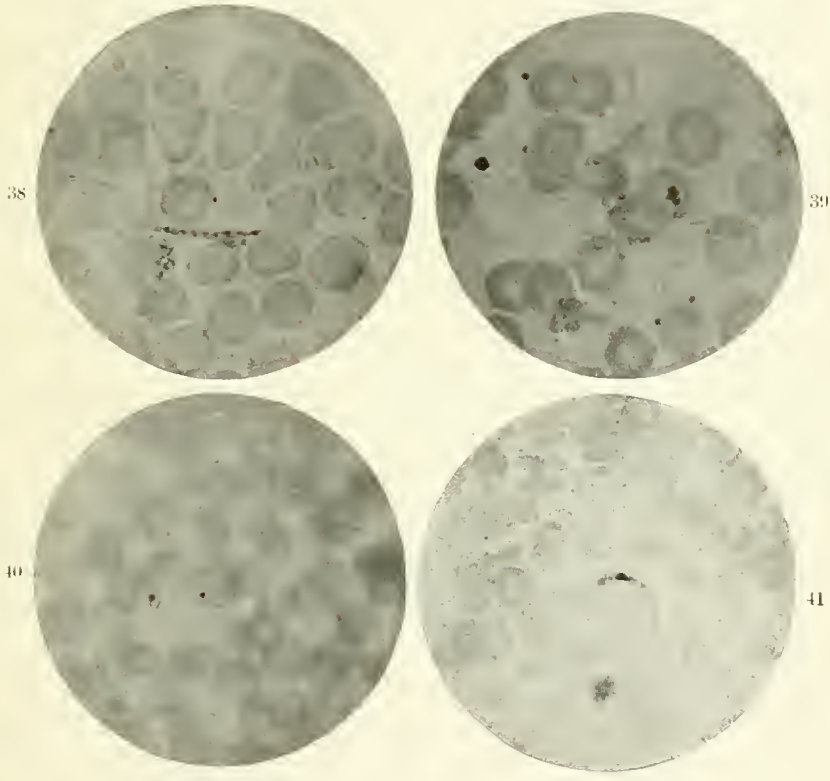

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